NEWS

Deer Isle-Sedgwick Bridge in Maine, which was dedicated last month see p. 4

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157 Miles of Lance Creek - Denver - Glenrock Pipe Line is

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REPUBLIC LINE PIPE

ENGINEERING NEWS-RECORD

NEWS

Volume 122 JUNE 29, 1939 Number 26

NOTEBOOK NEWS

Quick Surveys of Construction Events

▶ Biggest news of the week is the President's proposal of a huge federal and local public works scheme on a self-liquidating basis. Although loose and lacking detail, the plan has already occasioned much debate.

People who think well of the plan argue that the proposed work is of a useful kind; that it requires no actual outlay of money since the loans are to be repaid out of earnings; that it will make employment for men now on relief; that it will help cities get back on their own by wiping out free grants. And of course if the work is done under regular contract procedure there will be more business for contractors and engineers.

Others see plenty of dark sides to the picture. The whole scheme lacks soundness, they insist, pointing out that it is easier to call a project self-liquidating than actually to make it repay. They also refer to the President's insistence on keeping up the WPA, an institution which they claim stands in the way of recovery. They profess to see signs of political motivation in the scheme, and they doubt whether city governments will be helped by having Washington pay for their works against a mere certificate of indebtedness. They emphasize that it makes no pretense of utilizing private investment facilities but assumes that the federal government must henceforth control all public works purse-strings. Last but not least they point out that the plan would fasten the toll-road system on the country as a permanent establishment, contrary to the practice of a century.

More will be heard of these two schools of thought.

Underwood & Underwood

CARMODY HEADS FEDERAL PUBLIC WORKS

JOHN M. CARMODY, Rural Electrification Administrator, has just been appointed to head the new Federal Works Agency (*see page 2*).

Pennsylvania Authority To Build Bridges and Dams

A bill extending the powers of the Pennsylvania General State Authority to permit the authority to build bridges and dams and lease them to the commonwealth under a 30-year purchase arrangement, has been signed by Governor James of Pennsylvania. The authority was set up by the legislature some years ago to build institutional buildings, with PWA aid, and rent them to the state.

The bill provides that the bridges built under the new power be operated as toll bridges by the authority, and the tolls be turned over to the state motor license fund. The authority's bonds would be serviced by means of a rental paid by the state. At the end of a 30-year period the bridges would be turned over to the state and made toll free.

New Spending Plan Is Announced

President suggests loans for self-liquidating projects as substitute for PWA grants

Plans for a new spending program based on construction of self-liquidating projects financed through borrowing by federal agencies and also through 100 per cent federal loans to non-federal agencies were announced by the President on June 22. A number of different types of projects are involved, spread over periods of two to seven years and aggregating about $3,060,000,000. Expenditures during the fiscal year 1939–40 would total about $870,000,000. Legislation will be necessary to put the program into effect, so that full details are not yet available.

In announcing his new program, the President expressed his opposition to the move made in the House last week to transfer $125,000,000 from the WPA appropriation to PWA. The President

(*Continued on page 9*)

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Former Highway Chief Convicted in Pennsylvania

Roy E. Brownmiller, former Secretary of Highways of the State of Pennsylvania, was found guilty June 25 on charges of malfeasance and nonfeasance. Brownmiller was charged with permitting a $600,000 padding of highway department payrolls in Lucerne County just before last November's election. He has indicated that he will appeal the case.

A number of other former state officials, including former chief highway engineer H. H. Temple, are still to be brought to trial on charges of conspiracy to create a monopoly of the state insurance and bonding business.

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Carmody Heads Federal Works

Former REA administrator nominated as head of new Federal Works Agency

John M. Carmody was nominated by the President June 22 to be administrator of the new Federal Works Agency which, on July 1, will absorb all the federal agencies principally concerned with construction or public works—as provided in the President's reorganization plan. Carmody's appointment must be confirmed by the Senate.

Carmody, who is currently administrator of the Rural Electrification Administration, has been in the federal service since 1933. His first work was in connection with labor disputes as a member of the former National Labor Board and later as chairman of the Bituminous Coal Labor Board. He served as chief engineer of the Civil Works Administration and the Federal Emergency Relief Administration during 1933-34. For eight months ending in 1935 he was a member of the National Mediation Board, and in 1936 he was made deputy administrator of Rural Electrification. He became administrator a year later.

An industrial engineer by profession, Carmody was a member, until he became head of REA, of the New York management engineering firm of Stevenson, Jordan, & Harrison. He was for six years editor of *Factory* and for two years editor of *Coal Age*, both McGraw-Hill publications. His earlier experience included ten years as chief inspector and superintendent for several steel companies and another ten years on production and merchandising work in the garment industry.

Federal Works Agency

The agency of which Carmody, if confirmed by the Senate, will take charge next month will have five major divisions dealing, respectively, with roads, public buildings, housing, public works, and relief work.

The Public Roads Administration is simply the present U. S. Bureau of Public Roads, turned over intact to the FWA and headed by its present chief, whose title is changed to Commissioner of Public Roads.

The Public Buildings Administration will take over from the Treasury the functions and personnel of the Public Buildings Branch of the Procurement Division and from the Department of the Interior those of the Branch of Buildings Management of the National Park Service. The administration will be headed by a Commissioner of Public Buildings to be appointed by the administration of the Federal Works Agency.

The U. S. Housing Authority is placed under the FWA without change in its name or organization.

The Federal Emergency Administration of Public Works, commonly known as PWA, becomes part of FWA under the name of the Public Works Administration; it will be headed by a Commissioner of Public Works to be appointed by the Federal Works Administrator.

Finally, FWA would include the Works Progress Administration with its name changed to Work Projects Administration. According to the President's reorganization plan, the new WPA would be headed by a Commissioner of Work Projects appointed by the Federal Works Administrator. However, the relief bill which has passed the House and is now pending in the Senate provides that WPA be headed by a board of three men appointed by the President with the advice and consent of the Senate.

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Boston Engineer Firm Celebrates 25th Year

The Boston consulting firm of Fay, Spofford & Thorndike, well known throughout the New England region, is planning to celebrate its 25th anniversary June 30 by holding an open house at the Engineers Club in Boston. The partners in the firm are Frederic H. Fay, Charles M. Spofford, John Ayer, Bion A. Bowman, Carroll A. Farwell, and Ralph W. Horne.

Parking Meters Upheld By High State Court

So long as the ingress and egress of a property owner on a street is not disturbed, he has no complaint against the use of parking meters, the West Virginia Supreme Court held June 20 in dissolving an injunction granted by a Webster County Court against the use of parking meters in Webster Springs.

"The police power of municipalities," the court said, ". . . extends to every reasonable restriction of parking."

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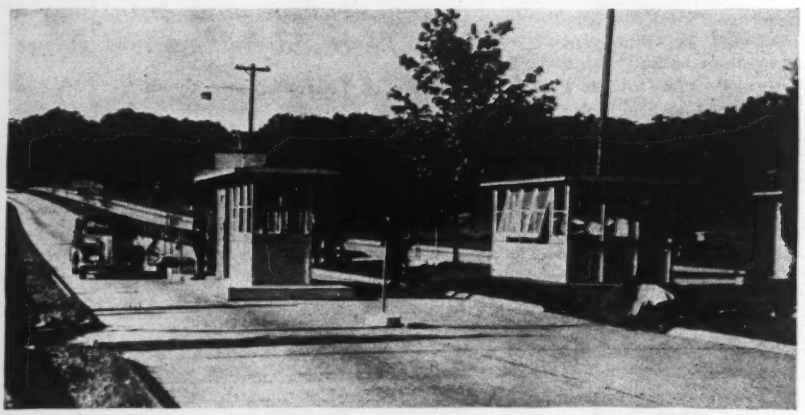
Arizona Road Department Undergoes Reorganization

Pay cuts for highway department engineers and a reorganization of the highway department have been ordered by Governor Jones of Arizona.

All construction sections of the highway department, including the bridge and dam engineering departments, the plans department, and the estimating division, are to be consolidated into one department, to be headed by Fred Grant, head of the plans division.

Swan Erickson, formerly engineer of dams and certification, who would have been reduced to the rank of assistant engineer of bridge design in connection with the reorganization, has resigned his post.

Pay cuts have been ordered in the department ranging from 10 per cent in the lower brackets to 20 per cent for department heads.



Wide World Photo

TOLL COLLECTION STARTS ON MERRITT PARKWAY

TEMPORARY toll booths were erected on Merritt Parkway in Connecticut last week to permit the collection of tolls which started Wednesday, June 21. Two toll collection booths are being used, each located in the center of one of the two 26-ft. lanes. The booths, each 4 ft. wide, rest on 8-ft. platforms. A superintendent's house is located on the center island.

Between the start of toll collections at 8 a.m. Wednesday and midnight the following Sunday, June 25, collections were made from about 87,000 vehicles at 10 cents per car.

No difficulties were encountered until Sunday evening, when heavy westbound traffic taxed the capacity of the lanes. Auxiliary westbound lanes are now being built.

WASHINGTON HIGHLIGHTS

Special reports by Paul Wooton

PENDING final Congressional action on the limitation of cost of WPA-built buildings which the House included in its relief appropriation bill, Administrator Harrington has ordered that no public building is to be started by WPA which was not approved by the President before June 14.

TVA's AUTHORIZATION to issue bonds to purchase the Tennessee Electric Power Co. property, which has passed both houses of Congress in widely divergent forms, is still deadlocked in conference. Senator Norris, TVA proponent, said June 26 that there was apparently no chance of getting legislation authorizing the purchase. Norris had proposed as a compromise that the rigid house limitations on the area of electricity sale be changed to permit sale within a 150-mile radius of any TVA generating plant, but this was rejected by Representative May, sponsor of the house bill.

PEAK OF ACTIVITY in the current PWA program is expected to be reached about the end of July. At that time development at construction sites will amount to more than 600,000 men. PWA disbursements so far have amounted to about $291,000,000 and will exceed $300,000,000 for the first half of the year. About $320,000,000 has already been dispersed.

A CENSUS of housing in the United States to determine the "number, character, and geographical distribution of dwelling structures . . . and the social and economic characteristics of their ownership and use" is provided for in a bill introduced by Senator Wagner and passed by the Senate. The census would be carried out in connection with the regular 1940 census at a cost not greater than $8,500,000.

THE UNITED STATES would assume the major part of the cost of rebuilding bridges which interfere with navigation under the terms of a bill of Representative Bailey's which has been favorably reported by the House committee on commerce. Whereas under existing law the Secretary of War may order the owner of an obstructing bridge to remove or alter it at his own expense, the proposed legislation would provide that the federal government bear all the cost except that chargeable to improvements benefiting the owner. The Department of War is opposed to the bill.

Wide World Photo

UNUSUAL USE FOR TUNNEL

THIS EXCAVATION may look like any water, sewer or subway tunnel, but actually it is for an underground hospital at Ramsgate, England, the first in that country. A whole hospital is being dug out of rock chalk 90 ft. below ground, immediately below the present Ramsgate General Hospital. It will include a general ward 559 ft. long containing 200 beds.

Bay State Public Works Declared Extravagant

Charges of extravagance and maladministration are leveled against the Massachusetts Department of Public Works in a special commission report made public this month by Governor Saltonstall. The governor at the same time asked for the resignation of Public Works Commissioner William F. Callahan. The commissioner, however, declined to resign, declaring that the report is "biased and prejudiced."

Charges in the report include award of "gift contracts," "trimming of taxpayers" in connection with tree removal work after the hurricane of last fall, and "promotion of personal pets." The investigation leading to the report was ordered last January by Governor Saltonstall.

The report charges that the cost of tree and stump removal was excessive by about $600,000, that the department failed to seek federal aid in repairing hurricane damage, that contracts for bridge reconstruction were awarded without competitive bids, and that unnecessary bridges were built and that departmental engineers were not used to the full in design work.

As a result of the commissioner's refusal to resign, the governor has ordered that payments to contractors on the hurricane rehabilitation work be halted.

Anti-Trust Action On Building Costs

Attorney-General to start extensive prosecution of activities that affect costs.

Plans of the federal government for nation-wide prosecution under the anti-trust act of all trade agreements and other practices that are believed to have a bearing on the cost of construction were outlined by Thurman Arnold, Assistant Attorney-General, speaking before the New York Building Congress on June 21. Some time ago the Attorney-General announced that his department was to make a study of combinations in restraint of trade in the construction industry, but at that time no details were given.

A second government move aimed at the building industry came June 27 when the temporary national economics committee, popularly known as the monopoly committee, began hearings which aim to give a general view of the economics of the construction industry. Data for the study have been complied by Peter Stone, a housing student connected with the federal government.

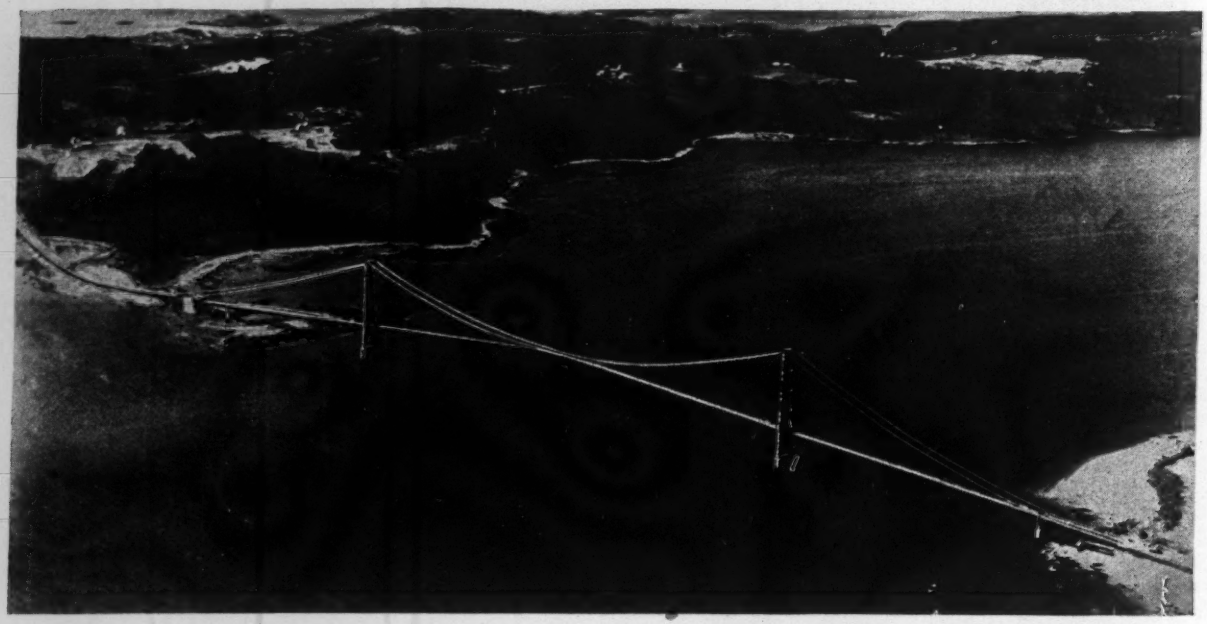
Anti-trust action

Arnold stated that little could be accomplished in eliminating practices that increase the cost of construction through scattered prosecutions of small groups, hence the department is laying its plans for a widespread attack on all practices that are believed to keep the cost of labor and materials at artificially high levels. The department's action is to be centered largely on mass housing and so will be directed toward the materials that go into house construction, the contracting groups that specialize in such work and the building trade unions.

As affecting the cost of building construction, Arnold cited the price-fixing arrangements between producers of building materials and their efforts to limit the introduction of new materials and products that would appear to affect the market for established products, collusive arrangements between distributors and producers to limit competitive selling, contractors' bid depositories which are used in an illegal manner to eliminate abnormally low bids, licensing of contractors and the limiting of work to local contractors, collusive agreements between labor organizations and contractors, and legislative restraints on construction such as building codes that unnecessarily limit the use of new materials.

An extended abstract of Arnold's paper will be given in the July 6 issue of *Engineering News-Record.*

Long-Span Suspension Bridge in Maine



THE NATION'S NEWEST SUSPENSION BRIDGE, which was dedicated last week, connects isolated Deer Isle with the Maine mainland. Economy limited the roadway width to 20 ft., narrowest of any such long-span structure.

DEDICATION CEREMONIES on June 19 officially marked the opening of the Deer Isle-Sedgwick suspension bridge across Eggemoggin Reach in Maine. Limited funds, foundations in deep water and an exposed, wind-swept location (the reach is an arm of the Atlantic) presented problems that were met by ingenious design and clever construction methods. The entire structure, consisting of a main span of 1,080 ft., two side spans of 484 ft., two deep and six shallow piers, two abutments and roadway approaches, was built for $870,000.

To build the two main piers in deep water, the foundation contractor sank prefabricated cofferdams of steel sheetpiling, their bottom edges cut to fit the irregular rock surface of the bed of the bay. This procedure, as well as other interesting foundation construction, was described in *ENR* Aug. 18, 1938, p. 207.

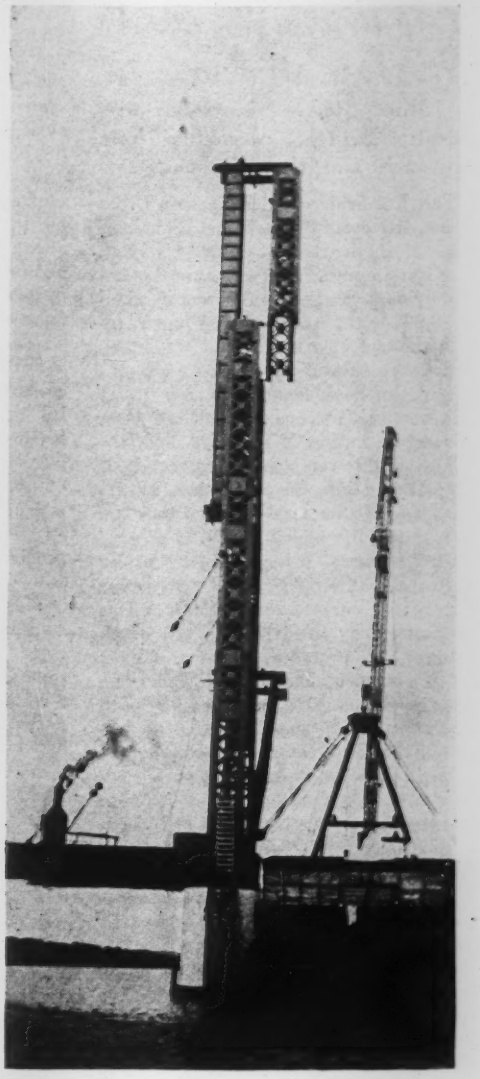
Economy required the lightest possible structure consistent with safety and sound engineering practice. A 20-ft. concrete roadway was considered adequate, but introduced design problems to cope with wind stresses on such a long, narrow structure. Steel towers 185 ft. high carry two 7½-in. cables, each made up of nineteen 1½-in. galvanized bridge strands. At the center of the main span the cables are fastened to the 6½-ft. stiffening girders to damp cable vibration under high winds. Also from each tower leg at roadway level three storm cables radiate to various points on the main span suspension cables. These are essential in stiffening the structure.

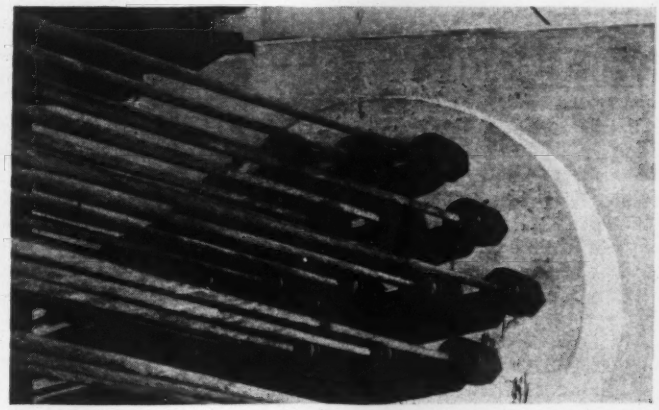
The bridge was built as a WPA project sponsored by a local district and the state. Robinson & Steinman, New York, were consulting engineers. Merritt-Chapman & Scott Corp., New York, built the substructure, and the Phoenix Bridge Co., Phoenixville, Pa., erected the superstructure.

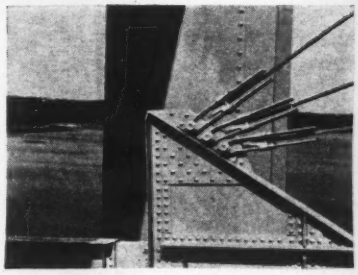
COFFERDAMS for the submerged bases of the two main piers were built up of steel sheetpiling and steel framing, trimmed to fit bedrock contours, and dropped to place in deep water by a huge floating derrick.

Dedicated Last Week

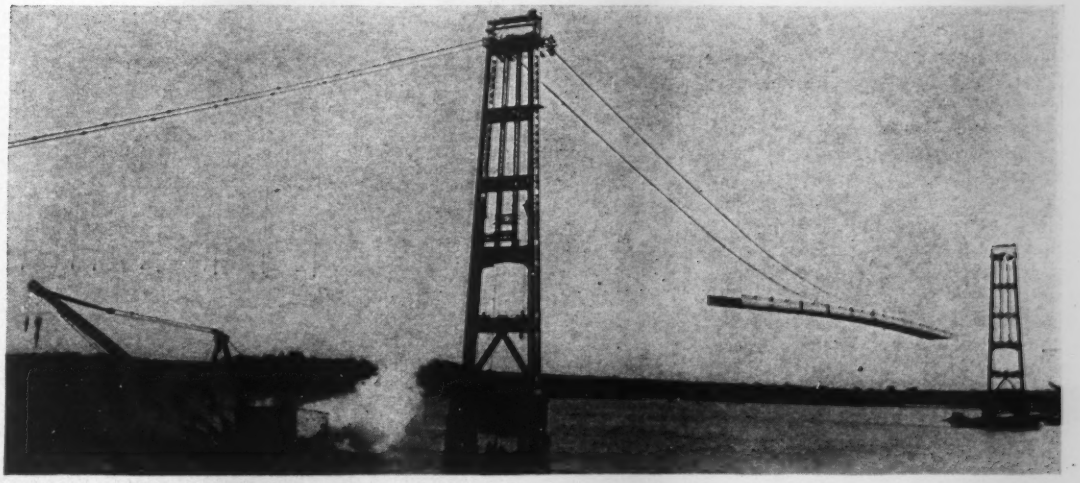
L-HEAD CRANE (right) made up of approach span girders, erected steel on the main towers beyond the reach of floating derricks. Tower sections made up of two legs and a cross strut were assembled on the outriggers at right of tower base and lifted into place as a unit. The crane hoisting engine was perched on a platform made of approach girders suspended by cables from the lower tower steel.







STRANDS of the suspension cables (above) were individually socketed to anchor bars through a threaded connection that permitted easy adjustment to proper length. At left is one of four attachments for storm cables which are very necessary in this exposed location; connection is to the top of the stiffening girders at the towers.



EXTREME CARE was necessary in erecting stiffening girders and floor steel to prevent strain on the light towers; steel was placed first at center of main span, then on side spans as a balance. Suspender rope cable bands were placed from a cage riding auxiliary cables; no catwalk was used.

Lift Bridge Wrecked In Collision

Ship strikes Norfolk-Portsmouth Bridge, wrecking one approach and the lift spans

The lift bridge which carries U. S. Route 460 over the southern branch of the Elizabeth river, between Norfolk and Portsmouth, Va., was almost completely destroyed early this month when an 8,592-ton tanker moving upstream with the aid of a tug at about 4 knots, struck the east tower span, which supported the back leg of the east tower. The vertical lift span draw had been raised to a height of 122 ft.

The east tower span was carried off its pier and into the river, causing the collapse of the east tower and the fall of the lift span.

The highway bridge, which carries a 20-ft. roadway, is a toll structure which was completed in 1928 and is now owned by the Norfolk-Portsmouth Bridge, Inc. It was designed and built by Harrington, Howard & Ash. The bridge company is proceeding with plans for reconstruction under the direction of Harrington & Cortelyou.

The following description of the accident is taken from a statement to *Engineering News-Record* by T. J. Cambern and R. H. Tatlow, III, of the Kansas City consulting firm.

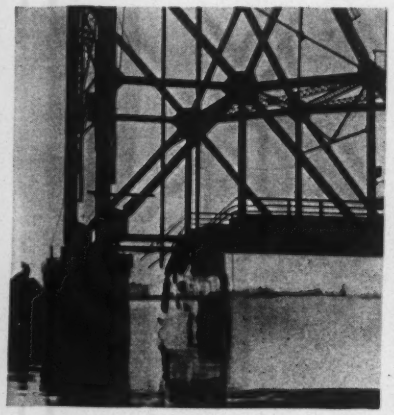
The vessel struck the north truss of the east tower span near the second panel point from the pier, plowing its way in to scour along the side of the base section of the pier. The anchor bolts holding the base casting of the north tower column were sheared by a clockwise movement of the casting, while the anchor bolts of the south tower column base were sheared cleanly in a direction normal to the centerline of the bridge. With the shearing of the anchor bolts the tower was lifted bodily and carried south and to the channel before being dropped to strike the pier. In its descent, the base casting of the north tower column struck the edge of the pier coping near the centerline of bridge, the lower section of the column and its base casting falling directly in front of the pier and behind the fender. The lower chord of the north truss struck the top of the pier, was carried on across to the south to fall and lodge on the protruding shelf of the base section of the pier. The south truss and south tower column were carried clear of the pier to fall in deep water.

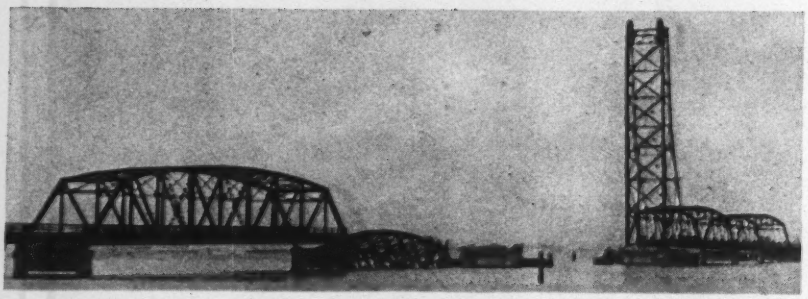
The east end of the tower span, resting on rocker castings, was pulled forward to fall directly in front of the pier. The south-east corner rests in shallow water on a shell bank. It is doubtless this which prevented this span from turning on its side as the tower fell. The north casting is several feet above the bottom, the span being supported entirely on the two diagonally opposite corners, the south-east corner on the shell bank and the north-west corner on the base of the tower pier.

With the collapse of the east tower, that end of the lift span fell vertically until the span stood on an angle of about forty-five degrees, the west end finally breaking away from the restraint of its counterweight by breaking off the anchor castings securing the counterweight ropes to the lift span.

Following the failure of the rope anchor castings at the west end of the lift span, the counterweight dropped, tearing its way through the floor and burying itself in the mud of the river bottom. In its descent, the counterweight tore out the floor slab and stringers of the end panel of the approach span, and these in turn carried with them the end floor beam.

The west tower, which remained standing, had many members damaged, some of which may be repaired and some of which must be replaced. At the top the tower is leaning two inches north and two inches west, with other material dislocations. The west tower span was also damaged by the falling counterweight, the damage being confined to the floor system in the east two panels, which was carried out by the counterweight.





THE WRECKED Norfolk-Portsmouth bridge and, above, where the west counterweight broke through the floor

LABOR NOTES

AN ENGINEERS UNION affiliated with AFL, the International Federation of Technical Engineers', Architects' and Draftsmen's Unions, has been recognized as sole bargaining agency for technical employees of the Central Nebraska Power and Irrigation District (Tricounty District). The contract provides that a closed shop go into effect when construction of the district's project is completed November 1, 1940.

EMPLOYERS may petition the National Labor Relations Board for a collective bargaining election in cases where two or more bonafide labor organizations claim a majority but neither petitions the board for certification, according to a change in NLRB regulations.

THE INDEPENDENT union which was formed by groups of workers on the South Penn toll road project in Pennsylvania after the groups had forced abrogation of closed-shop AFL contracts, is now negotiating for affiliation with the CIO.

WASHINGTON, D. C., carpenters who have tied up nearly all building construction work there by a strike in effect since June 12 (*ENR* June 15, 1939 p. 817), went back to work last week under a compromise agreement. The carpenters have been asking for a $13 seven-hour day as compared with the present $12 eight-hour day. Under the settlement reached, existing wages will be in force on projects now contracted for, and on new work a $12.50 wage per eight-hour day will be paid. On May 1, 1940, a $13 daily wage will go into effect.

A TWO-WEEK lockout of plasterers in Minneapolis, called by plastering contractors in an effort to eliminate a production limitation clause in the union agreement, was settled June 21 under a compromise providing for a 7 per cent increase in production.

Pollution Plan Urged for Boston

Commission recommends a $25,000,000 program to eliminate sewage from harbor

A $24,717,000 program for the elimination of pollution in Boston Harbor and the rivers tributary to it has been recommended in the report of a special commission of the Massachusetts legislature. Expenditure of $14,695,000 on the Charles, Mystic and Neponset rivers and several smaller streams was recommended, as was expenditure of $10,022,000 on treatment works to handle sewage discharged into Boston Harbor.

The commission, made up of sanitary engineering officials of the state, the city of Boston, and the Metropolitan District Commission, and employing Greeley & Hansen of Chicago and Metcalf & Eddy of Boston as consulting engineers, found that the degree of pollution in the harbor was approaching a level dangerous to public health.

The three sewage treatment works recommended to clean up the harbor are the Moon Island Plant, costing $3,180,000; the Deer Island Plant, costing $2,784,000; and the Nut Island Plant, costing $3,068,000. The three plants will have a combined capacity of 322 mgd.

The program to clean up the tributary rivers includes construction of overflow conduits and relief sewers. The projects recommended are as follows:

Project	Cost
Alewis Brook conduit	$875,000
Arlington conduit	380,000
Aberjona River conduit	675,000
Charles River work, north side	1,210,000
Charles River work, south side	6,210,000
Malden River conduit	345,000
North metropolitan relief sewer	4,160,000
Stony Brook relief sewer	340,000
East Concord St. pumping station	500,000

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Landfill Controversy To Be Arbitrated

A commission of five men appointed by Dr. Thomas Parran, Jr., Surgeon-General of the United States, will decide whether the New York City refuse land fills are a menace to public health and safety, according to an agreement reached on June 19 between attorneys for the city and Queens County. The decision to submit the matter to arbitration led to the dismissal of indictments handed down by the Queens County grand jury against Sanitation Commissioner William F. Carey and Health Commissioner John L. Rice. (*ENR* Apr. 13, 1939, p. 475).

The commission to be appointed by Dr. Parran will consist of four physicians outstanding in public health work and a sanitary engineer. Their investigation will pass judgment on the much-disputed land-fill operations conducted at five sites in New York City (*ENR* Sept. 1, 1938, p. 270).

RUBY DAM TAKES SHAPE

WORK on Ruby Dam, which the City of Seattle is building in the Diablo Gorge of the Skagit River for hydroelectric purposes, is moving forward at the rate of 9,000 cu.yd. per week, and the lowest section is now 10 ft. above water level. The recesses visible above in the downstream face are for later bonding with the second step concrete.

In the first stage of construction Ruby Dam will be brought to a height of 210 ft., which will later be increased in two stages to 445 ft. and ultimately to a height of 658 ft.

First USHA Housing Opens Next Week

Loan contracts totalling $30,000,000 completed by USHA with sixteen cities

On July 4, tenants will move into the first five USHA-aided low-rent housing projects to be opened for occupancy. Two projects will open in Buffalo and one each in New York City, Austin and Jacksonville.

Average monthly shelter rents per dwelling unit to be charged tenants in the new projects have been announced as follows: in the Buffalo projects, $13.35 and $12.91; in New York City about $17.00; at Jacksonville $10.58; and at Austin $6.59. The average annual income of the families to be admitted to the projects ranges from $400 at Austin to $950 at New York City.

The projects cover a wide range of building types. In Jacksonville one- and two-story houses, some of them built in rows, are used; in Austin all units are grouped in short one-story rows; the Buffalo project includes three-story apartments, two-story flats, and two-story row houses; and the New York City project is composed entirely of six-story elevator apartments.

New loan contracts

Loan contracts to local housing authorities to meet 90 per cent of the cost of 25 low-rent housing projects were approved by the President June 24 in a total amount of $30,193,000. This brought the total of outstanding loan contracts to $463,576,000. Also outstanding are earmarkings for specific cities of $202,847,000. The newly approved loan contracts will provide about 7,686 family dwelling units for more than 30,000 persons. In all, the USHA has now signed contracts for the construction of about $99,442 family dwellings in 255 projects.

The loans approved range in size from $3,636,000 for the Newark Housing Authority to $744,000 for Hattiesburg, Miss.

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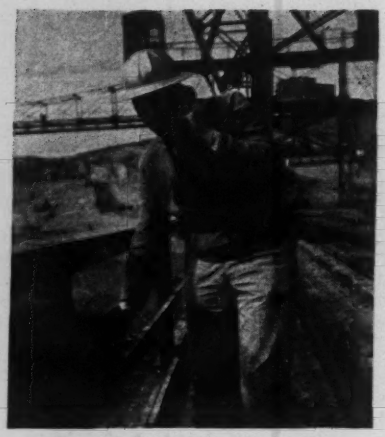
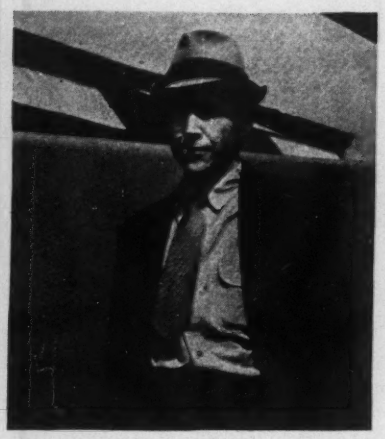
Ohio Bridge Failure Caused by Collision

The failure on June 18 of the 114-ft. Black Fork Creek Bridge near Mansfield, Ohio (*ENR* June 22, 1939, p. 823) resulted from two automobiles striking the bridge truss, investigation by the State Highway Department has revealed. The two automobiles, it was determined, were racing, and one of them crashed into a truss of the bridge, while the second car struck the first.



Arthur Donaldson, office engineer for Consolidated Builders, Inc., at Grand Coulee Dam, uses one of the job's field telephones to try to keep track of those 20,000-yd. daily concrete pours C.B.I. is putting out these days. Concrete is only one of his worries—he has to keep track of sand and gravel production at the mile-distant Brett pits, drainage, grout and cooling systems in the dam, powerhouse construction, etc.



Harmon C. Richardson, a hard-rock man from Colorado, is assistant superintendent for the Dravo Corporation on 10½ miles of Delaware River Aqueduct tunnel near Fishkill, N. Y. Under that battered hat rests a fertile brain, responsible for many startling tunneling innovations that will be uncorked when Dravo really gets going on the Fishkill job. Before going east he was on the Valverde Tunnel in California.

On the job for almost 40 years and still smiling is the record of **F. G. Scherer,** superintendent of construction for the Division of Water Supply in Newark, N. J. "One never finishes with a water distribution system," says Scherer, whose principal activity is the laying of new mains to supplement existing supply lines overtaxed by constant population growth. Scherer also is in charge of maintenance.

MEN AT WORK

Current news about Connecticut's Merritt Parkway is chiefly concerned with toll booths at the New York end, but at the other end the state highway department is building a million and a half dollar bridge over the Housatonic River. One the job, **Leo J. Conaty** is resident engineer for the highway department. The bridge will consist of twelve spans, ranging from 128 to 224 ft. in length.

Superintendent of the St. Petersburg million and a half dollar WPA sanitary sewer construction project is **H. A. McGillvray.**

Although he has a tough job on his hands battling quicksand and other treacherous ground conditions in deep cuts, he prefers working in sunny Florida to North Dakota where he was engaged in the contracting business prior to 1925.

Bane of the safety engineer's life is nails in scrap form lumber thrown carelessly about a job. **M. E. Flynn,** safety engineer for the U. S. Bureau of Reclamation at Yakima, Wash., points to one of his headaches on the Roza diversion dam. Flynn has the cooperation of the contractors, and as a result the Yakima-Roza project shows an enviable safety record. Wooden stairs instead of ladders help this record.

OBITUARY

JULIAN C. SMITH, president of the Shawinigan Water & Power Co. died in Westmount, Quebec, June 24 at the age of 61. Mr. Smith had been connected with Shawinigan since 1903 when he was general superintendent and operating manager of the company. He became president in 1933. Smith was a past president of the Engineering Institute of Canada.

LLOYD GARRISON, retired Salt Lake City engineer and former state engineer at Utah died at Sawtelle, Calif. on June 16 at the age of 54. After leaving his state post in 1925, Garrison practiced in Salt Lake until some years ago when he retired on account of ill health.

CARL T. HOLMER, 37, city manager since last October and earlier city engineer of Ontario, Calif. was killed in an automobile accident June 13.

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New Spending Plan

(Continued from page 1)

pointed out that such a step would neccessitate dropping 165,000 men from the work relief rolls, but he also feels that the PWA system of grants to local agencies is not sound on a long term basis.

A permanent program for expansion of public works in time of depression, the President has said, should be confined to self-liquidating projects and should be on a 100 per cent returnable basis. It is apparently the intention that receipts from the amortization of the new loans go into a revolving fund to be used for public works expansion in future emergencies.

Largest item in the program is construction over a 4-yr. period of $750,000,000 worth of bridges, high-speed highways, and city by-passes which would be built, presumably by the federal government, and the cost would be liquidated from tolls. It is proposed to spend $150,000,000 on this type of project during 1939–40.

On non-federal projects — waterworks, sewage disposal plants, bridges, hospitals, and other municipal projects —it is proposed to spend $350,000,000 in two years, with $150,000,000 spent during the first year.

To aid the railroads, the plan contemplates expenditure of $500,000,000 over three years for the purchase of equipment which would be leased to the railroads at rates which would repay the cost over a period of years. $100,000,000 would be spent in 1939–40.

All the above elements in the plan would be administered by the new Federal Works Agency (*see page 2*). Placed under the Department of Agriculture would be a $460,000,000 7-yr. program for expanding rural electrification work, involving an initial expenditure of $20,000,000. The same department would administer a 2-yr. plan for expanding by $500,000,000 the self-liquidating features of the Farm Security Administration program.

Finally, the new plan involves loans to foreign governments over the next two years of $500,000,000, to be spent in this country and used for development and reconstruction of the foreign countries.

Although no housing construction is involved in the new plan, the President considers the bill now before Congress which would provide an additional $800,000,000 for USHA as an important part of the program. He said that the new USHA money could be used to meet the needs of the group with annual incomes of $1,200 to $2,000—a group not now served by USHA and which, he said, cannot be served by private industry. As the bill passed the Senate, however, projects were definitely restricted to the lowest-income group, and nothing is known at the USHA offices of any plan to change the bill.

CONTRACTS AND CAPITAL

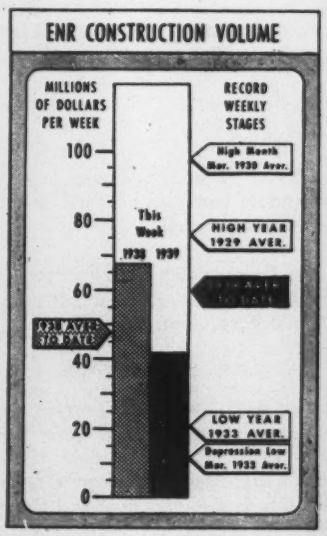
ENGINEERING construction awards for the week, $41,900,000, are 3 per cent higher than last week, but 38 per cent below the volume for the corresponding week in 1938.

The current week's total brings 1939 awards for the first half to $1,557,224,000, an increase of 24 per cent over the $1,254,931,000 reported for the 26-week period last year.

Public construction for the week is 15 per cent higher than a week ago, but 42 per cent below a year ago. Private awards are 27 and 15 per cent lower, respectively, than last week and last year.

In the classified construction groups, gains over last week are in waterworks, sewerage, bridges, public buildings, and streets and roads. Increases over last year are in waterworks, sewerage, bridges, industrial buildings, and public buildings.

New capital for construction purposes for the week totals $43,499,000, an 85 per cent decrease from the $281,453,000 reported a year ago when PWA funds swelled the volume. The current week's new financing is made up of $30,193,000 in USHA loans for low-rent housing, $8,398,000 in state and municipal bonds, $3,659,000 in REA loans, and $1,249,000 in corporate security issues.



CONTRACTS

(Thousands of dollars)

	Week Ending June 30 1938	June 22 1939	June 29 1939
Federal	$10,061	$5,827	$5,836
State & Municipal	47,526	23,114	27,547
Total public	$57,587	$28,941	$33,383
Total private	10,033	11,602	8,517
TOTALS	$67,620	$40,543	$41,900

Cumulative		
1939	(26 weeks)	$1,557,224
1938	(26 weeks)	$1,254,931

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1938 26 Wk.	1939 26 Wk.
NON-FEDERAL	$933,867	$639,759
Corporate securities	181,938	126,264
State & Mun. bonds	347,959	320,898
R.E.A. loans	400	43,732
R.F.C. loans	64,891	2,446
P.W.A. allotments	227,609	
U.S.H.A. loans	111,070	146,419
FEDERAL	$135,585	$311,427
TOTAL CAPITAL	$1,069,452	$951,186

FHA MORTGAGES

	Week Ending June 25 1938	June 17 1939	June 24 1939
Selected for appraisal	$22,667	$23,535	$23,130*

Cumulative		
1939	(25 weeks)	$579,271*
1938	(26 weeks)	$444,776

*Subject to revision.

ENR INDEX NUMBERS

Index Base		1913	1926
Construction Cost	June	235.02	112.97
Building Cost	June	196.41	106.17
Volume	May	232	102

MEN AND JOBS

WILLIAM P. HUGHES, city engineer of Lewiston, Idaho, has been named chairman of the Idaho Engineering Board, which was created by the 1939 state legislature. The board will direct the engineering profession in Idaho, conducting examinations for licenses and ruling on charges of misconduct presented to it. R. J. NEWELL, resident engineer of the U. S. Bureau of Reclamation at Boise, is vice chairman, and RAYMOND G. BRIGGS, Boise consulting engineer, secretary. Other board members are J. E. BUCHANAN, dean of the engineering school of the University of Idaho, and H. R. FLINT, director of the Idaho State Bureau of Highways.

L. T. NUCKOLS has been made engineer of track for the Chesapeake & Ohio Railway. His headquarters will be at Richmond, Va. P. L. KOEHLER has been appointed to succeed Nuckols as division engineer at Ashland, Ky., and H. L. TALLMAN succeeds Koehler as assistant division engineer at Russell, Ky.

CARL G. H. ANDERSON and GEORGE P. EMERSON have been appointed assistant managers of the engineering division of the Maryland Casualty Co., Baltimore.

J. E. BELLIVEAU has been appointed chief engineer of the Nova Scotia department of highways, replacing R. W. MCCOLOUGH who was recently appointed deputy minister.

R. B. GARRABRANT, Washington correspondent for *ENR*, has joined the staff of the American Engineering Council. He is to be succeeded in the *ENR* Washington post by R. B. COLBORN, who has been *ENR* news editor for the past three years. A. N. CARTER, until recently a civil engineer with the Firestone Plantations Co., in Libera, will take Colborn's place as news editor.

AUBREY MCCABE of Elizabeth City, N. C., has been appointed director of FHA for North Carolina.

LEO F. STOCK, JR., has been appointed Southeastern district engineer for the Farm Security Administration. He replaces FRANKLYN H. MCGOWEN, who has been transferred to Washington.

THOMAS H. MACDONALD, chief of the U. S. Bureau of Public Roads, in Washington, D. C., received the 1939 Marston award at the Iowa State College commencement June 12. The award, which was established by Anson Marston, Iowa State dean emeritus of engineering, and a former president of Am.Soc.C.E., is presented annually in recognition of outstanding engineering achievement by a graduate of the College. After his graduation in 1904, MacDonald served on the Iowa State faculty, and in 1907 he became state highway engineer. He was chief engineer of the Iowa highway commission from its establishment in 1913 until 1919, when he took his present post in Washington.

FRED STEIGER, city superintendent of streets, Tulsa, Okla., has resigned.

DEVEREUX H. MURPHY has succeeded MORGAN P. O'BRIEN as city engineer of Springfield, Ill.

MEETINGS

NATIONAL COUNTY OFFICERS ASSOCIATION, annual convention, Ogden, Utah, July 17–19.

AMERICAN SOCIETY OF CIVIL ENGINEERS, annual convention, San Francisco, July 26-28.

FIFTH International Conference on Timber Utilization, Zurich, Switzerland, Aug. 29–31.

REGIONAL AND LOCAL

NEW YORK STATE COUNTY HIGHWAY SUPERINTENDENTS ASSOCIATION, Lido Club, Long Beach, L. I., N. Y., July 19-21.

ASSOCIATED GENERAL CONTRACTORS, North and South Carolina branches, summer convention, Myrtle Beach, S. C., July 21-22.

MINNESOTA Section, A.W.W.A., Duluth, Aug. 24–25.

NEW ENGLAND WATER WORKS ASSOCIATION, annual convention, Hotel Windsor, Montreal, Sept. 12-15.

SOUTH DAKOTA WATER AND SEWAGE WORKS CONFERENCE, fifth annual meeting, Rapid City, Sept. 14-15.

ELECTIONS AND ACTIVITIES

GEORGE R. CANNING, engineer of foreign wire relations for the Ohio Bell Telephone Co., is now president of the Cleveland Engineering Society. Charles H. Christian is vice president and Harry L. Wilcox is treasurer.

THE MINNESOTA Association of Professional Engineers has been organized, with Hibbert Hill, superintendent of the St. Anthony Falls Water Power Co., as president. S. E. Blunt is vice president, J. C. Robbers is secretary, and W. H. Gille is treasurer.

ONE HUNDRED FIFTY members and guests attended the spring meeting of the New York State Sewage Works Association in Albany early this month. Channel Samson received a silver plated loving cup for the excellence of his report on the operation of the sewage treatment plant of Sewer District No. 2, Town of Tonawanda, for the year 1938. The next meeting of the Association is to be held in Olean, N. Y., Oct. 6-7.

O. C. THOMPSON, Fayette county engineer, was elected president of the Iowa County Officers Association in Des Moines June 15. J. W. Wiersma of Grundy County is vice president and Frank O. Laing, Polk County, is secretary-treasurer.

A CHAPTER of the Associated General Contractors of America is being formed by the contractors of Arkansas. Burt L. Knowles of Washington, field engineer for the A.G.C., is assisting the work of organization. A temporary organization committee, composed of Ben M. Hogan, chairman, E. V. Bird, H. L. Dickinson, S. F. Ditmars, S. M. Dixon, S. E. Evans, R. T. Higgins, D. B. Hill, D. F. Jones, and A. B. Pickett has been formed, and invitations to join have been sent to all Arkansas licensed contractors.

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Erosion Control Halves High Point Silting

Silting of the municipal reservoir at High Point, N. C. has been reduced 50 per cent since 1934 by erosion control measures on the watershed tributary to it, a recent survey by the U. S. Soil Conservation Service revealed.

The reservoir, on Deep River, was built in 1928 at a cost of $155,000; it stores about 4,600 acre-ft. In 1934 the Soil Conservation Service discovered that sediment was reducing the storage capacity about one per cent a year, representing an annual loss of more than a ton of topsoil per acre in the watershed. In that year, a cooperative erosion control program was started in which more than 40 per cent of the farmers in the watershed now participate. Measures undertaken include contour plowing, terracing, and crop rotation.

The annual rainfall between 1934 and 1938 was somewhat above normal, 50 in. a year as compared with 46 in. annually between 1928 and 1934.

CONTRACT UNIT PRICES

What contractors are bidding on different kinds of construction work

HIGHWAY BRIDGE VERMONT

OWNER: Vermont State Highway Department, Montpelier, Vt., H. E. Sargent, chief engineer, A. D. Bishop, bridge engineer.

PROJECT: Constructing 3-span steel I-beam bridge with concrete deck, 252 ft. overall length, on Park Street over Roaring Branch, Bennington, Vt. Spans 84 ft. each. Clearance 16 ft. Roadway 24 ft., and sidewalk 5 ft. wide.

CONDITIONS: Must be completed in 200 consecutive calendar days. Contractor to furnish all materials, and pay the following wage rates: skilled, 60 to 93 1/3c. per hr.; semi-skilled, 55 to 60c. per hr.; and common, 40c. per hr.

BIDS: Eight bids were received on March 17, ranging from the contract low of $39,528 to the high of $51,869.

LOW BIDDERS:

1. Bennington Constr. Co., Bennington, Vt. (contract) $39,528
2. Carlo Bianchi Co., Inc., Framingham, Mass... 40,295
3. M. J. Burrington, Jr., Bennington, Vt..... 41,607

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Excav., inc. borrow	100 c. y.	$0.50	$0.50	$0.50
2. Trench excav., earth	25 c. y.	1.00	2.00	1.00
3. Trench excav., rock	10 c. y.	4.00	4.00	3.00
4. Channel excav	5,400 c. y.	.50	.60	.40
5. Struct. excav	654 c. y.	2.00	4.00	3.00
6. Maintain traffic	L. S.	150.00	200.00	50.00
7. Sub-base, gravel	1,000 c. y.	.60	.60	.50
8. Grav. surf. course	360 c. y.	1.00	.75	1.00
9. Double tack coat, ref. tar	560 gal.	.20	.15	.20
10. Conc. Cl. A	291 c. y.	20.00	20.00	20.00
11. Conc. Cl. B	197 c. y.	18.00	15.00	20.00
12. Reinf	65,270 lb.	.04	.045	.04
13. Steel superstr	L. S.	15,800.00	15,500.00	18,000.00
14. 30 in. corr. galv. metal pipe	72 l. f.	3.50	5.00	4.50
15. Remove superstructure	L. S.	200.00	500.00	200.00
16. Hvy. stone fill (Mod.)	780 c. y.	3.75	3.00	3.50
17. Cable guard rail	248 l. f.	.50	.50	.50
18. Anchors, guard rail	6 ea.	10.00	10.00	10.00
19. Balustrade rail	502 l. f.	5.00	4.50	4.50
20. Conduit, light. sys	L. S.	200.00	200.00	200.00
21. Cut and remove trees	9 ea.	15.00	10.00	10.00

HIGHWAY BRIDGES AND CULVERTS, TEXAS

OWNER: Texas State Highway Department, Austin, Tex., J. Montgomery, State Highway Engineer, Austin. Oscar A. Seward, Jr., Groesbeck, Tex., engineer.

PROJECT: Grading, drainage, structures on 5.812 miles of U. S. Highway 84, Limestone County, Tex., from 10.965 miles east of McLennan-Limestone County line to west of Mexia.

CONDITIONS: Contract awarded May 8, 1939, and must be completed in 200 working days. Railroad transportation available. All materials furnished by contractor. Stipulated wage rates are: skilled, $1.00 per hr.; semi-skilled, 50c. per hr.; and common, 40c. per hr.

BIDS: Five bids received April 25, 1939, ranging from the contract low of $151,525 to the high of $162,303.

LOW BIDDERS:

1. Cage Bros. & F. M. Reeves & Sons, Bishop, Tex. (contract) $151,525
2. Ben Sira & Co., Dallas, Tex..... 156,962
3. W. W. Vann & Co., Kerrville, Tex..... 160,539

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear and grub	57 acre	$100.00	$149.00	$125.00
2. Com. road excav	59,927 c. y.	.15	.16	.18
3. Rock road excav	8,210 c. y.	1.00	.75	.80
4. Com. borrow	32,012 c. y.	.15	.15	.17
5. Com. channel excav	138,857 c. y.	.20	.18	.17
6. Unc. struct. excav., culv	456 c. y.	1.50	1.00	1.50
7. Unc. struct. excav., brdg	600 c. y.	1.50	1.25	1.50
8. Blade embankment	432 hr.	3.00	3.00	3.50
9. Overhaul	80,380 y. qtr.	.05	.08	.05
10. Sprinkling	3,077 M gal.	1.00	1.25	1.00
11. Cl. A conc., gird. and slabs.	927 c. y.	19.00	20.80	22.50
12. Cl. A conc., bent and abut.	204 c. y.	20.00	21.30	22.50
13. Cl. A conc., culv	758 c. y.	19.00	19.00	20.00
14. Reinf	370,149 lb.	.04	.042	.04
15. Cast steel brg. plate	15,650 lb.	.10	.10	.12
16. Struct. steel	10,280 lb.	.095	.10	.12
17. Struct. steel, I-beam	35,650 lb.	.059	.06	.07
18. 15-in. sq. precast conc. test piling	95 l. f.	4.00	5.00	5.00
19. 15-in. sq. precast conc. piling	1,835 l. f.	3.25	3.30	3.50
20. 16-in. sq. precast conc. test piling	145 l. f.	4.10	5.00	6.00
21. 16-in. sq. precast conc. piling	1,355 l. f.	3.35	3.85	4.50
22. Railing, type P	1,508 l. f.	3.00	2.60	3.00
23. Dry riprap, type A	861 c. y.	3.50	3.50	3.00
24. Grout riprap, type A	72 c. y.	7.50	8.00	7.50
25. Com. mortar riprap	182 c. y.	9.00	10.00	8.00
26. Grass retards	1,200 c. y.	1.25	1.40	1.40
27. Mulch sodding	180 c. y.	1.00	1.00	1.25
28. Rock retards	40 c. y.	4.00	3.50	3.75
29. Right-of-way markers	77 ea.	1.25	1.50	1.50
30. Spot sodding	42,570 s. y.	.025	.025	.02
31. Rolling	854 hr.	2.00	2.60	4.50
32. 16-in. oct. precast conc. piling	580 l. f.	3.60	3.85	4.50
33. 16-in. oct. prec. conc. test piling	70 l. f.	4.00	5.00	6.00
34. 18-in. oct. prec. conc. piling	450 l. f.	5.00	4.55	6.50

SEWERS, NEW YORK

OWNER: Board of Contract and Supply, Albany, N. Y.: J. J. McManus, City Hall, Albany, City Engineer.

PROJECT: Constructing sewer and appurtenant work on Crescent Drive North and Crescent Drive South, Albany. Approximately 4,200 ft. long.

CONDITIONS: Vitrified pipe used throughout. Contractors to furnish all materials and to pay the following wage rates: skilled, 75c. to $1.50 per hr.; semi-skilled, 75c. per hr.; and common labor, 45c. per hr.

BIDS: Three bids were received April 17, ranging from the contract low of $14,620 to $21,659. Contract awarded April 25, 1939.

LOW BIDDERS:

1. Edward Musto, Albany, N. Y. (contract).... $14,620
2. Samuel B. Easton, Albany, N. Y..... 21,242
3. North End Contracting Co., Albany, N. Y..... 21,659

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Trench excav. under 10 ft	4,500 c. y.	$0.60	$1.70	$1.98
2. Trench excav. 10–12 ft	520 c. y.	.75	2.00	1.98
3. 6 in. vit. clay sew. pipe	300 l. f.	.40	.40	.47
4. 10 in. vit. clay sew. pipe	12 l. f.	1.00	.90	1.01
5. 12 in. vit. clay sew. pipe	4,260 l. f.	1.16	1.20	1.17
6. 20 in. vit. clay sew. pipe	350 l. f.	2.15	2.75	2.77
7. 24 in. vit. clay sew. pipe	230 l. f.	3.30	3.75	3.84
8. 27 in. vit. clay sew. pipe	126 l. f.	5.51	5.50	5.28
9. 30 in. vit. clay sew. pipe	15 l. f.	6.40	5.25	6.02
10. 12x10-in. vit. wye branch	1 ea.	5.54	3.50	4.19
11. 12x6-in. vit. wye branches	85 ea.	4.42	3.00	3.54
12. 20x6-in. vit. wye branches	5 ea.	11.50	7.50	8.64
13. 24x6-in. vit. wye branches	3 ea.	16.28	10.00	12.39
14. 27x6-in. vit. wye branches	1 ea.	35.10	22.00	22.66
15. 30x6-in. vit. wye branches	1 ea.	38.88	24.00	25.46
16. Brick manholes, std	20 ea.	100.00	120.00	90.00
17. Br. manhole, old frames and cov.	6 ea.	85.00	100.00	80.00
18. Receiving basin (old mat'ls.)	1 ea.	100.00	90.00	220.62
19. Rebuild br. manhole, 48-in. sew	L. S.	100.00	225.00	114.82
20. Cl. 3 conc., cradle (1:3:6)	95 c. y.	9.00	10.00	9.00
21. Lumber (left in trench)	1 M bm.	1.00	30.00	25.00
22. Misc. iron and steel	250 lb.	.08	.10	.10

CONSTRUCTION REPORTS

Compiled by BUSINESS NEWS DEPARTMENT
Engineering News-Record, 330 W. 42nd St., New York
ELSIE EAVES, MANAGER
(Daily service also available—Write for details)

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

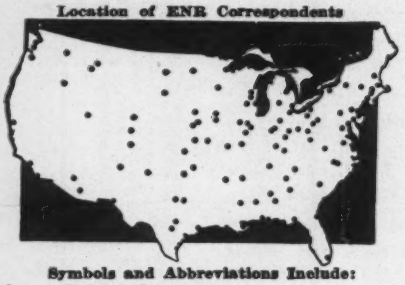
Classes of Construction
(Named in order of Listing)

Water Supply	Unclassified
Sewers, Waste Disposal	Materials, Equipment
Bridges, Grade Cross'gs	Public Buildings
Streets & Roads	Commercial Buildings
Earthwork, Waterways	Industrial Buildings

Stages Reported

PROPOSED: (except Streets & Roads);
BIDS ASKED (new announcements only. For full calendar, see also preceding issues of ENR);
LOW BIDDERS ($500,000 projects and over);
CONTRACTS AWARDED

Location of ENR Correspondents



Symbols and Abbreviations Include:

† Federal Government
★ Project of $500,000 or over
ENR Engineering News-Record
CD McGraw-Hill Construction Daily

WATER SUPPLY

PROPOSED WORK

Ala., Cuba—WW. $25,000. J. W. Goodwin Eng. Co., Martin Bldg., Birmingham, engrs.

Ala., Thomaston—WW sys. $25,000. J. W. Goodwin Eng. Co., Martin Bldg., Birmingham, engrs.

Calif., Tahoe City—Tahoe City Public Utility Dist., voted $13,500 bonds to finance purchase and improvt. of WW. sys. CD 4/6—ENR 4/13.

Mass., Bourne—Bourne Water Dist., S. A. Days, chn., Town Hall, plans completed steel elevated tank, c.i. pipe watermains. Est. $200,000. Whitman & Howard, 89 Broad St., Boston, engrs. CD 3/15—ENR 3/23.

N. J., Bloomingdale—Boro, c.i. watermains various streets, WPA. $35,205. W. Burke, foot 5th Ave., Paterson, WPA & Owners engr.

O., Middletown—L. P. Diefenbach, city engr., additional tests wells at WW plant.

O., Vermillion—Elevated steel water storage tank and pumping equipment, $35,000. R. F. MacDowell, Chester Twelfth Bldg., Cleveland, engr.

Okla., Eufaula—Diesel engine generating equip. in WW pump plant. $30,000. R. Collins, Eufaula, engr.

B. C., Penticton — B. C. Braceville, municipality clk., bids in July, water reservoir on Penticton Creek, 9 mg. capacity. $41,000. A. Pearson, Town Hall, engr.

B. C., Westview—WW. $40,000. Light, Power & Water Bd., Westview, engrs.

Que., Beauport—A. Chvetien, mayor, water supply sys. Est. $15,000.

Que., L'Assomption—Compagnie Services d' Aqueduct, c/o J. Aubin, Charlemagne, WW. Est. $15,000. Engineer, c/o Owners.

Que., Rouyn—A Leclerc, clk., WW exten. $20,000. W. Bouchard, Town Hall, engr.

Que., Windsor Mills—Watermain extensions, St. Ambroise St. $15,000. A. E. Dubuc, Sherbrooke, engr.

†Alaska, Kodiak—P. Wks. Officer, Puget Sound Navy Yard, Wash., D. C., water supply and fire protection sys. for new naval air base, $300,000.

BIDS ASKED

Bids Asked July 6

N. Y., Binghamton—Bd. Contr. & Supply, City Hall, Contr. 5 in connection with WW. rehabilitation, filter plant imprvts. Est. $106,000. Barker & Wheeler, 36 State St., Albany, engrs.

N. C., Winterville—W. L. Hunsucker, mayor, complete water softening and iron removal sys., pressure Zeolite type. H. L. Rivers, Greenville, engr.

Bids Asked July 10

O., Covington — Village, revised specification new waterworks elevated tank, pumps, (**Correction**—status.) CD 5/25—ENR 6/1.

Bids Asked July 11

Tex., Hamlin — J. L. Culberson, mayor, filtration plant, for municipal waterworks plant, $20,000. French & Pruit Co., 221 Citizens Bank Bldg., Abilene, engrs.

Bids Asked

Pa., Mackeyville—Comrs. Clinton Co., Lock Haven, WW and distr. sys. for tuberculosis hospital and village. Est. $20,000. County Engineering Dpt., Court House, Lock Haven, engrs. CD 5/23—ENR 5/25.

Pa., Pittsburgh—F. M. Roessing, dir. P. Wks., roofs for Allentown and Lincoln St. water storage tank. $26,000. J. Croak, city engr.

CONTRACTS AWARDED

Fla., Lakeland—Fdns. and extens. to power plant in connection electric and water sys. imprvs., to Ellis & Jones, Inc., 826 E. Lemon St., **$16,600.** Est. $19,000. Bids 6/9, awarded 6/16. CD 6/5.

Ill., River Forest (Oak Park P. O.)—Village, E. Bush, chn. Finance Committee, Town Hall, sys. arterial water mains along Berkshire St., to Lathrop Ave. to Washington Blvd. WPA. **$159,000.**

Me., York Village — Yorke Water Dist., J. H. Lucas, supt., chlorinating station, to Vulcan Constr. Co., 193 Hanover St., Boston, Mass., approx. **$15,000. PWA.** Bids 6/19, awarded 6/22. CD 6/13—ENR 6/15.

Mass., Lincoln—Bd. Water Comrs., Town Hall, 10,400 lin. ft. 8 in. c.i. pipe watermains, to Baker & Co., 1335 Hyde Park Ave., Hyde Park, **$27,010.** Bids 6/17, awarded 6/23. **PWA.** CD 6/8—ENR 11/3.

Mass., Wakefield—Water Dpt., M. Merrill, supt., Town Hall, laying, relaying several miles c.i. pipe watermains, day labor. **$100,000.**

N. J., Sayreville—Watermains in various streets, WPA. **$23,815.** J. H. Weitzen, 290 George St., New Brunswick, WPA and owners engr.

N. C., Newton—E. Haupt, mayor, imprv. water sys. **WPA. $15,858.**

N. C., Wilson—W. M. Danile, mayor, Div. 2, WW and sewerage imprvs., Sect. 2, sewage disposal plant, to A. H. Guion & Co., Kinney Bldg., Charlotte, **$276,856***** Sect. 3 Item 1, water purification plant, Item 2, raw water pump station, to W. Muirhead Constr. Co., Durham, **$88,280** and **$20,490** respectively. Grand total $385,626. **PWA.** Bids 6/15. CD 6/7.

Tex., Benavides—R. Ramos, mayor, WW deep wells, pumps, ground reservoir, steel elevated tank and tower, distributing lines, to Wilder Constr. Co., Benevides, **$67,149.** CD 2/2—ENR 2/9.

Tex., Port Arthur—Jefferson County Water Control and Imprv. Dist. WW imprv. water treatment plant, Purchase and Hire, **$121,000.** CD 2/14—ENR 2/16.

†Tex., San Antonio—Con. Q.M., Brooks Field, elevated steel tank, with 100 ft. steel tower, etc. Purchase and Hire, **WPA.** CD 10/31—ENR 11/3.

Que., Sherbrooke—Municipality, 14,965 ft. watermains. Day labor. Voted $31,500. W. H. Veilleux, City Hall, engr. CD 5/26—ENR 6/1.

SEWERS, WASTE DISPOSAL

PROPOSED WORK

Ala., Albertville — Sanitary sewerage sys. $120,000. J. W. Goodwin Eng. Co., Martin Bldg., Birmingham, engrs.

Ala., Aliceville — Sewerage sys. $16,000. J. W. Goodwin Eng. Co., Martin Bldg., Birmingham, engrs.

Ala., Camden — Sewerage sys. $40,000. J. W. Goodwin Eng. Co., Martin Bldg., Birmingham, engrs.

Ala., Carrollton — Sewer exten. $25,000. J. W. Goodwin Eng. Co., Martin Bldg., Birmingham, engrs.

★**Ind., Gary**—Bd. Sanitary Comrs., R. E. Rowley, chn., City Hall, bids soon sewage treatment plant ,interceptor sewer, Div. A, Contr. 5, "Alley 2-E Sewer." Part of $3,000,000 PWA project.

★**Mich., Detroit**—City to sell bonds, exten. Southfield Rd. concrete sewer (in tunnel) to serve west side of city. $2,840,000. Plans being prepared. G. R. Thompson, city engr.

★**Mich., Detroit**—City to sell bonds, Baby Creek Interceptor in Bay Creek, to serve southwest section of city. $1,276,000. Plans being prepared. G. R. Thompson city engr.

Neb., Holdrege—Sewer exten. to outlying dists. $25,000.

N. J., Franklin—Somerset Co. Courthouse, Flemington, rein.-con. storm drains, manholes, catch basins various streets, $25,418 WPA. J. H. Weitzen, 290 George St., New Brunswick, WPA and owner's engr.

N. J., Jamesburg—Town, Town Hall, sewage treatment plant E. bank of Manalapan Brook at Lincoln Ave. WPA. J. H. Weitzen, 290 George St., New Brunswick, WPA and owners engr.

N. J., Rahway—Sanitary sewers Allen St., Union, Elizabeth, Lambert and Stone Sts. WPA. $39,430. J. H. Weitzen, 290 George St., New Brunswick, WPA and owner's engr.

N. J., Roselle—Town, Town Hall, storm sewers, catch basins, manholes, sanitary sewer, Warinanco Park. WPA. $25,902. J. H. Weitzen, 290 George St., New Brunswick, WPA and owner's engr.

N. Y., Tarrytown and North Tarrytown—Bd. Trustees, Villages, of Tarrytown and North Tarrytown, sewage tr. plant for both villages. Est. over $100,000. Former bids for separate plans exceeded appropriation.

N. Y., Yonkers—Cast iron pipe replacement of tile or other non-metallic type sewers in Midland and Georgia Ave. area. Probably over $25,000. C. Sheridan, city engr.

S. D., Alcester—City election to vote $15,000 bonds, sewerage sys. $82,000. WPA.

Ont., Blenheim—Sewerage sys. Est. $100,000. G. McCubbin, Chatham, engr.

Que., Marieville — Provincial Government, Hon. B. Dussault, minister of Agriculture, Quebec City, drainage sys. on Des Heron River, Rouville Co. Voted $88,000. Dpt. Agriculture, Quebec City, engrs.

Que., Quebec City—Provincial Govt., Hon. B. Dussault, minister of Agriculture, drainage sys. Tortoise River, Laprairie Co. Voted $32,000.

Que., Rouyn—A. Leclerc, clk. sewerage sys. exten. $25,000.

Que., Windsor Mills—Sewer extensions, St. Ambroise St. $25,000. A. E. Dubuc, Sherbrooke, engr.

BIDS ASKED

Bids Asked July 5

Md., Baltimore — Bd. Awards, City Hall, sewers. CD 5/8—ENR 6/11.

N. Y., New York—President Bronx Boro, Bronx County Bldg., E. 161 St. and Grand Concourse, sewer and appurtenances over land of New York Central and Hudson River RR. near Spuyten Duyvil Sta.; sheet asphalt repaving Macy Pl., E. 148 St. and Belmont Ave.

Wis., Fort Atkinson — Addn. to sewage plant new aeration equipment, blower building, grit chamber, digester, piping electrical work. $29,000. E. F. Klement, Fort Atkinson, city engr. CD 5/19—ENR 5/25.

Bids Asked July 6

Mich., Detroit — H. E. Beyster, comr. P. Wks., City Hall, boat deck and slip at sewage disposal plant, incl. 166 ft. running feet steel sheet piling dock, dredging slip, backfilling behind sheet piling, steel rolling doors. Over $25,000. G. R. Thompson, City Hall, engr.

Bids Asked July 10

O., Covington—Village, rein.-con. primary settling tank, chemical treatment. $50,000. M. W. Tatlock, 911 Ferndale Ave., Dayton, cons. engr. CD 6/6—ENR 6/8.

Ore., Silverton—C. H. Hubbs, city recdr., Unit 2, sewage treatment plant, outfall sewer and interconnection. $16,000. Baar & Cunningham, Spalding Bldg., Portland, engrs.

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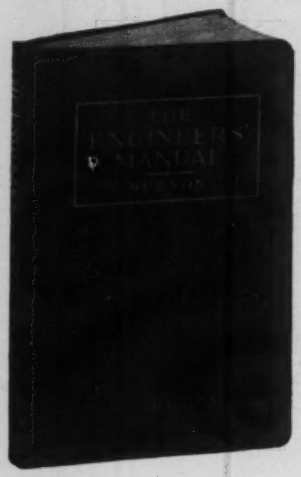

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BOOK NOTES AND REVIEWS

The month's additions to the engineer's reading and reference list

(*Continued from p. 75*)

Riveted Truss Highway Bridge, Pin-Connected Bridges, Mill Buildings and Roof Trusses, Office Building Frame, Structural Welding, Timber Roof Truss. An appendix of 94 pages includes specifications of leading technical organizations. The reviewer was specially interested in the chapters on plate girders, mill buildings and roof trusses and office-building frames. Some chapters he would like to have seen presented at greater length. Features of the book that may be specially noted are the pages on unsymmetrical bending and the S-polygon, the core or kern, the secant formula, camber, repeated and reversed stresses, stresses in welds, and "connectors" in the chapter on timber roof trusses. It is worthy of note that structural welding is receiving such a prominent place in textbooks so soon after its introduction as a feature of design.

The 86 "design sheets" scattered throughout the book show the skill of an experienced designer. The same may be said of the folding plates.

The footnotes are many and of interest. References are to technical literature easily available. One such is to the *Engineering News-Record* of a date as recent as May 19, 1938. A footnote refers to an inconsistency in determining the deformation due to shearing as pointed out by Professor Swain in his "Strength of Materials." In another is mentioned a common error of the "formula hound" in determining the length of cover plates in plate girders.—*Reviewed by* ROBINS FLEMING, *New York, N. Y.*

MISCELLANEOUS NOTES ON BOOKLETS AND REPRINTS

A SUPPLEMENT to "Dams—A Bibliography," published by the Engineer School at Fort Belvoir, Va. in 1936, has been published by the School. It brings the record up to September 1938. Price. 50c.

PAPERS presented at the 25th Annual Conference on Highway Engineering, held at the University of Illinois, March 2-4, 1938, have been published as Bulletin No. 77. Price, 50c.

PROCEEDINGS of the 24th annual Road School held at Purdue University, Lafayette, Ind., have been published by the Engineering Extension Department as Extension Series No. 42. A limited number of copies are available for distribution.

POLLUTION OF THE DELAWARE RIVER BASIN is the subject of a pamphlet (series B, No. 1) of the Interstate Commission on the Delaware River basin, Broad Street Station Building, Philadelphia, Pa.

ADHESION OF BITUMINOUS FILMS TO AGGREGATES is the subject of Research Series No. 62, Engineering Experiment Station, Purdue University, Lafayette, Ind.

ARMOUR INSTITUTE OF TECHNOLOGY, Chicago, has begun the publication of a series of bulletins. Bulletin No. 1 is "Tests of a Precast-Slab Floor Panel". The panels under test were built according to the White Steel Monolithic System.

NEW PUBLICATIONS

STANDARD SPECIFICATIONS FOR HIGHWAY MATERIALS and METHODS OF SAMPLING AND TESTING—Adopted by The Am. Assoc. of State Highway Officials. 383 pp. Published by the Association, 1220 National Press Building, Washington, D. C. Price $2.

TAR ROADS—By A. C. Hughes, W. G. Adam and F. J. E. China. 196 pp. Published by Edward Arnold & Co., London; Longmans Green & Co., New York. Price $6.50.

MECHANICAL WORLD YEAR BOOK: 1939—Published by Emmott & Co., Ltd., Manchester, England. Price 1s.6d.

MECHANICS FOR ENGINEERING STUDENTS—By John E. Younger. 461 pp. Published by International Textbook Co., Scranton, Pa.

(*Continued on p. 86*)

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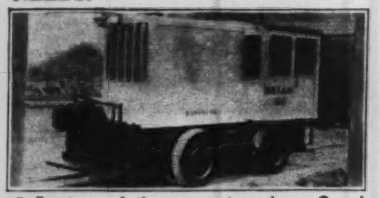

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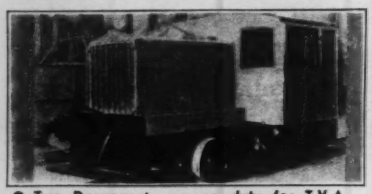

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(Continued from p. 84)

AMERICAN PLANNING AND CIVIC ANNUAL—By American Planning and Civic Association, 901 Union Trust Building, Washington, D. C.; 344 pp. Price $3.

BIG BRIDGE—Revised edition. By Rupert Sargent Holland. 281 pp. Published by Macrae-Smith-Company, Philadelphia. Price $2.

WHEELER PROJECT: A Technical Review—(Technical Monograph No. 38). Tennessee Valley Authority, Knoxville, Tenn. Price $1.

PLANS AND SPECIFICATIONS FOR THE NORRIS DAM—Technical Monograph No. 34. Tennessee Valley Authority, Knoxville, Tenn. Price $2.50.

TRAFFIC PLANNING REPORT: Youngstown, Ohio—Prepared for the city by Jensen, Bowen & Farrell, consulting engineers, Ann Arbor, Mich.

REUNION ANNUAL DE CAMINOS—PRIMERA and SEGUNDA. 472 and 379 pp. Published by Facultad de Ciencias Fisico-Matematicas, Universidad Nacional de la Plata, La Plata, Argentina. Price $5 and $4.

HIDRAULICA—By Pedro J. Dozal. 484 pp. Published by D. A. P. P. Mexico City, Mexico.

TECHNICAL DRAWING PROBLEMS—By Frederick E. Giesecke, Alva Mitchell, and Henry Cecil Spencer. 93 sheets. Published by the Macmillan Co., New York. Price $2.25.

THE INTERNAL COMBUSTION ENGINE—By C. Fayette Taylor and Edward S. Taylor. 322 pp. Published by the International Textbook Co., Scranton, Pa. Price $3.50.

KEMPE'S ENGINEER'S YEAR-BOOK 1939—45th Annual Edition—Revised by L. St.L. Pendred. 2824 pp. Published by Morgan Brothers, Ltd., London. Price 31s, 6d.

INDUSTRIAL INSTRUMENTS AND CHANGING TECHNOLOGY — By George Perazich, Herbert Schimmel and Benjamin Rosenberg. 148 pp. Published by the Works Progress Administration, Philadelphia.

TRANSACTIONS OF THE AMERICAN GEOPHYSICAL UNION 1938—In Two Parts—744 pp. Part II contains a report on the Western Interstate Snow-Survey Conference. Published by National Research Council, Washington, D. C. Price $3.50 and $1.25, respectively.

REPORT ON THE FIRST MEETING: Berlin, 1937—International Association for Hydraulic Structures Research. In German, English and French. 286 pp. Published by the Association, Kungl Tekn. Hogskolan, Stockholm, O., Sweden.

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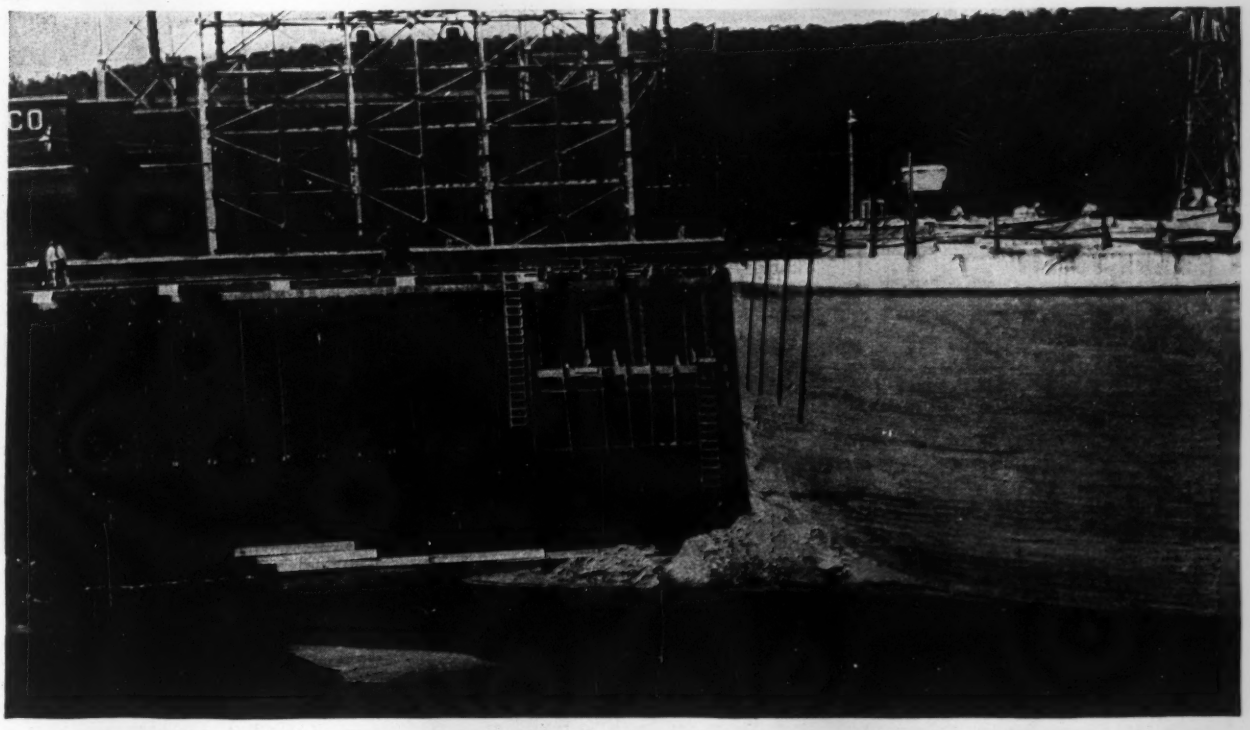

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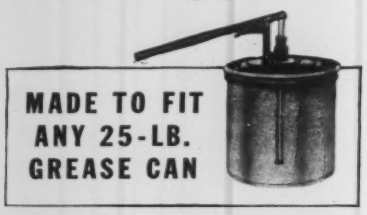

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News continued from p. 56

MEN AND JOBS

MICHAEL HOFFMAN, bridge engineer in the Minnesota State Highway Department, has been appointed state highway commissioner by the newly elected governor to succeed N. W. Elsberg, resigned. Hoffman, 49, graduated in civil engineering from the University of Minnesota in 1911 and with the exception of two years of war service has been with the highway department since 1913. He was made bridge engineer in 1925.

LOUIS M. NIMS, Michigan state WPA Administrator, has resigned to become deputy state highway commissioner of Michigan in charge of construction and operation. Nims has been connected with emergency relief work in Michigan since 1933, when he was chief engineer of the Michigan CWA. In 1934 he was state work director for the Emergency Relief Administration.

BERNARD M. THOMSON, acting city engineer since last June of Charleston, S. C. has been elected city engineer by the city council. Thomson has been in the city service 22 years, beginning in 1916 as inspector of drains.

FRED J. FISCHER, chief mechanical engineer of the Los Angeles Water Bureau, retired at the first of the year after 49 years service with the bureau. Fischer joined the Citizens Water Co. in 1889 as a steam engineer, and when that company was taken over by the Los Angeles City Water Co. in 1893 he remained on the staff as he did when the city acquired the water system in 1902. It was under his supervision that the city's hydraulic fill earth dams, including the two San Fernando dams, were built, as was also the Crystal Springs filtration gallery.

A. BALDWIN WOOD, for many years mechanical engineer for the New Orleans Sewer and Water Board, has been made superintendent for the board to succeed the late Alfred F. Theard. Wood has held the post of mechanical engineer since 1911, prior to which he was drainage engineer for the board. Since 1931 he has had the additional duties of director of water purification.

E. L. MIRE, assistant chief engineer of the Public Belt R.R. at New Orleans, has been appointed chief engineer.

VICTOR J. BEDELL, who has been general manager and chief engineer of the Public Belt R.R., has dropped the chief engineer's title and continues as general manager.

I. LAMONT HUGHES, formerly president of the Carnegie Steel Co., and vice president until 1936 of the Carnegie-Illinois Steel Corp., has been appointed secretary of highways for Pennsylvania. He is a past-president of the Engineers Society of Western Pennsylvania.

R. B. JONES has been appointed engineer of track for the Canadian Pacific Ry. Jones has been assistant engineer in the chief engineer's office since 1919 and joined the railway staff in 1913.

R. MUDGE, assistant engineer in the chief engineer's office of the C.P.R. has been appointed assistant engineer of track. A graduate of McGill University in 1906, Mudge entered the service of the railway in 1907 in the construction department. He was transferred to the chief engineer's office in 1924.

JAMES LAKE has been appointed state highway commissioner of South Dakota.

CAPT. KARL B. SCHILLING of the U. S. Engineer Corps, has assumed duties as project engineer on the Sardis Dam in Mississippi, succeeding the late Major John B. LaGuardia.

IVAN R. AULT, for a few months last year state highway director of Ohio, was appointed, just before Governor Davey left office, to the state board of registration for engineers and surveyors to fill the unexpired term of the late Curtis C. Lattimer, which expires in September 1940.

CLINTON D. HANOVER has been promoted to the position of chief of the bridge design section, bureau of bridges, New York City Department of Public Works. Hanover has been engineer in charge of the mechanical and electrical section, bureau of bridges, for the past year. Previously, he was for many years with Waddell & Hardesty, consulting engineers, New York, and most recently with Taylor & Fichter, contractors, as engineer in charge of erection of the Harlem River lift span of the Triborough Bridge.

ISIDORE DELSON has been appointed assistant to Homer B. Seely, deputy commissioner in charge of bridges, New York City Department of Public Works. Delson was formerly chief of the bridge

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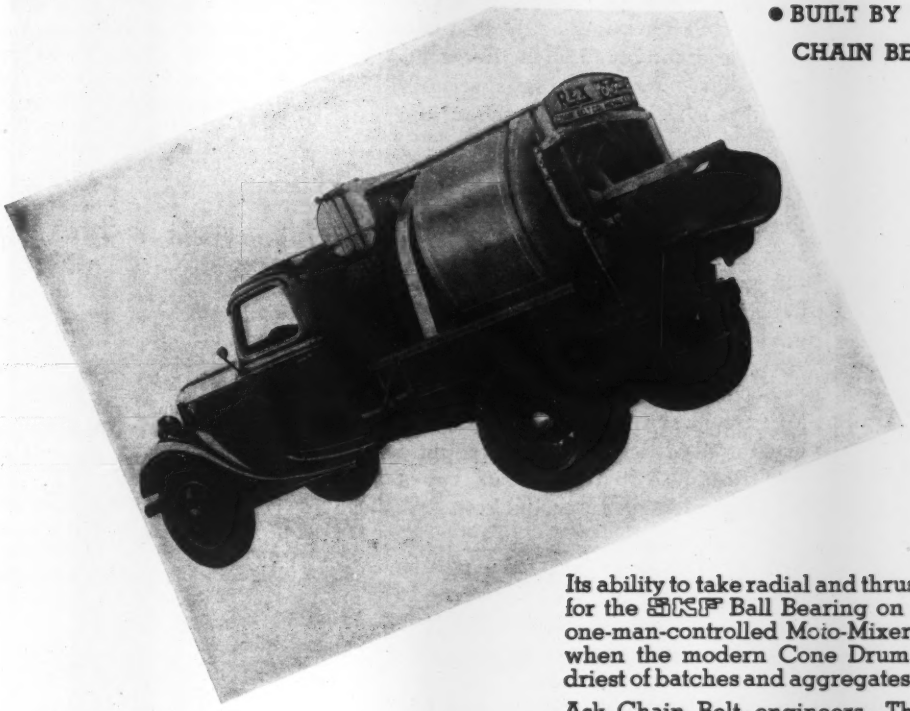


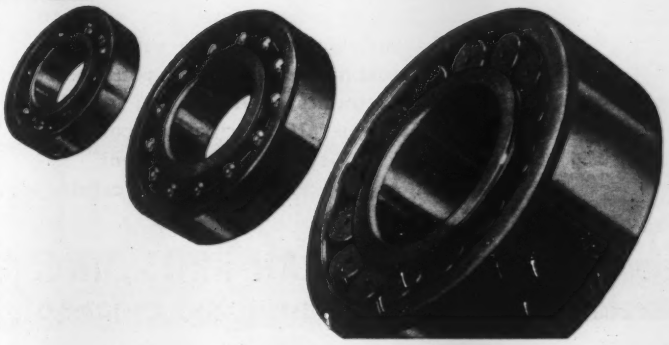
Its ability to take radial and thrust loads makes hard work easy for the SKF Ball Bearing on the forward mounting of this one-man-controlled Moto-Mixer. And that's a big advantage when the modern Cone Drum of this machine mixes "the driest of batches and aggregates of any gradation or number."

Ask Chain Belt engineers. They'll tell you that SKF's built-in alignment not only provides smooth, friction-free operation, but eliminates any binding of the drum regardless of torsional strain and frame weave. Bearing trouble is eliminated—and that means low maintenance costs . . . more concrete mixed properly and PROFITABLY. Bearing-wise engineers make it a habit to have SKF solve their bearing problems. 4257

SKF INDUSTRIES, INC., FRONT ST. & ERIE AVE., PHILA.

THE BEARINGS ARE SKF

BALL & ROLLER BEARINGS

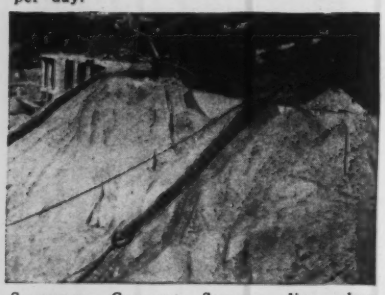


Costs Reduced
. . . ON TOUGH EXCAVATING JOBS

Sauerman Crescent Scraper making long cut-and-fill at toe of hill.

Dragging gravel from river-bar and building a sloping revetment to protect bank from erosion. Power unit is mounted on skid-frame.

Alaska Road Commission uses Sauerman portable unit which is moved from job to job to produce road gravel. The ½ cu. yd. Crescent bucket averages 225 cu. yd. per day.



Sauerman Crescent Scraper digs clay, sand and gravel from hill and hauls 600 ft., piling the material to a height of 35 ft. against the core wall of a dam.

MAN discovered long ago that earth materials could be excavated and conveyed with the greatest of ease by dragging a scraper bucket back and forth over the ground.

The Sauerman Crescent Drag Scraper is a modern adaptation of this age-old idea, featuring a bottomless scraper bucket of unique design and an improved two-drum power unit.

Because of its streamline shape, a Crescent scraper bucket possesses greater digging power and requires less line-pull than previous types of bottomless scraper buckets.

A Crescent bucket starts to dig the instant it is pulled forward. It fills to capacity within a few feet of travel, then ceases to dig and simply "rides" its load across the surface. When the bucket reaches the designated dumping point, the operator merely moves two levers on the power unit to cause the bucket to discharge its load and retrace its path to the loading point at a speed of 400 to 600 feet per minute.

These machines have a working range of 100 to 1500 feet, and will handle from 10 to 1000 cu. yd. of material per hour; the handling capacity depending upon the material, the working span, and the size of the scraper bucket.

Tell us what work you wish to do and we will quote on an economical machine to meet your exact requirements. Or if you require only general information concerning this type of equipment, ask for the 84-page Sauerman catalog.

CRESCENT Drag Scraper

TRADE MARK REGISTERED

SAUERMAN BROS., INC.
432 S. Clinton St., CHICAGO

design section, a position he held with the old Department of Plant and Structures which was absorbed by the new Public Works Department. Delson has been in the city employ since 1902.

WILLIAM L. SYLVESTER has been appointed assistant to Richard H. Gould, acting deputy commissioner in charge of sewage disposal of the New York City Department of Public Works. Sylvester has been connected with New York City sewage disposal work for the past eight years, entering the city employ when sewer work was handled by the Department of Sanitation.

• • •

Outdoor Space Considered For Road Show

San Francisco committees making arrangements for the annual convention of the American Road Builders Association, March 6-8, announced Jan. 9 that three-fourths of the available floor space in the Civic Auditorium had already been reserved for exhibitors. At the rate reservations were coming in, it was stated, a portion of Grove Street, adjoining the auditorium would probably be screened off for the duration of the convention and used for exhibits of heavy equipment.

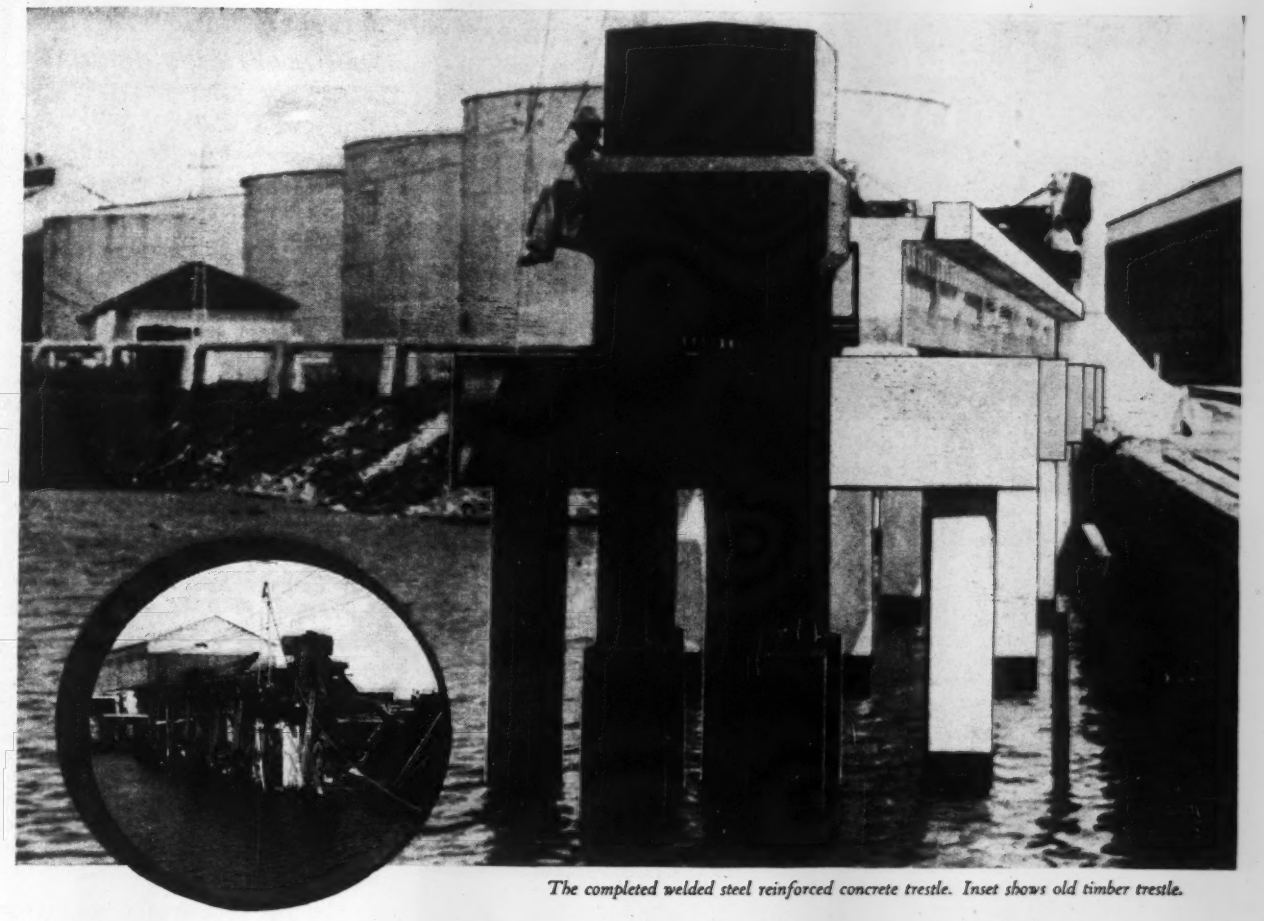
• • •

Asphalt Group to Meet On Coast Next Month

The 1939 Asphalt Conference is to meet in Los Angeles during the week beginning Feb. 27. This has been done for the convenience of the large number of highway engineers and builders who will go to the Pacific Coast for the meeting of the American Road Builders Association, the Associated General Contractors, the Western Association of State Highway Officials, and the National Equipment Distributors to be held in San Francisco March 6-10.

The conference, which is to have headquarters at the Biltmore Hotel, is under the sponsorship of the Asphalt Institute.

Two sessions each are to be devoted to road equipment, methods of construction, and highway materials. J. L. Harrison, senior highway engineer for the Bureau of Public Roads, will be chairman of the equipment session; Bernard E. Gray, chief engineer of the Asphalt Institute and Earl Withycombe, assistant state construction engineer of California, will handle the methods session, while Prevost Hubbard, chemical engineer of the Institute and N. F. McCoy, senior engineer of the Road Bureau, will be chairman of the materials session.



The completed welded steel reinforced concrete trestle. Inset shows old timber trestle.

How Welded Steel and Concrete Teamed Up in Cuba to Curb Corrosion

In replacing an old timber trestle with a modern steel design, here's how a Cuban railroad on the northern seaboard met a severe corrosion problem so as to assure long life at low cost.

1. The trestle was designed as an all-welded structure comprising I-beam stringers supported on H-beam piles and capped with channel cross beams. The decking, of open type, consists of rail cross-beams with channel stringers to which the rail clips are welded for holding the track in place. The car stop includes four H-beam piles with a welded plate bumper as shown.

All welding was done with Lincoln *"Shield-Arc"* Welders and "Fleetweld" Electrodes.

2. All steel members are encased in concrete. Piles and main beams have interior reinforcing frames and are covered with steel mesh welded to the steel members for bonding the concrete. Concrete jackets on piles extend several feet below the level at low tide. Decking rails are also encased.

Results: A strong, rigid, good-looking steel structure that is protected from corrosion. And, according to the builders, "costs were lower than comparative structures of other designs."

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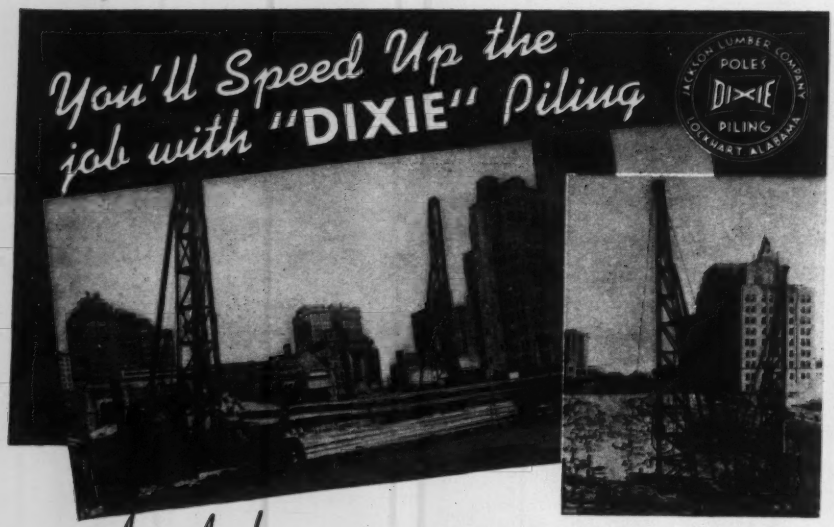

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Fig. 1645 Pat. Appl'd for

SELF-LOCKING HOLLOW SET SCREWS with the Knurled Points

Here are the set screws that cannot loosen up in service . . . that cannot cause trouble by failing to perform their intended duty. So cleverly have they been knurled around the cup points that by merely tightening them in the normal way, they are securely and automatically locked in place. This not only eliminates the possible breakdowns that might follow a set screw vibrating loose, but it makes frequent check-ups unnecessary.

Removal for adjustments is easily done with the customary wrench and the Knurled Self-Locker can be used again and again. These "Unbrako" Self-Lockers have been carefully and thoroughly tested in many different plants and under varied conditions. The results substantiate our every claim.

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347 Fifth Avenue N. Y. C.

MISCELLANEOUS NOTES ON BOOKLETS AND REPRINTS

(*Continued from p. 76*)

comprehensive picture is given of the evolution and present status and the elements of over-all planning for air development.

HIGHWAY TAX COSTS, a pamphlet published by the National Highway Users Conference, National Press Building, Washington, D. C., has reappeared in a 1938 edition. Unfortunately, the figures are no later than 1936.

GROUNDWATER PROBLEMS OF ARIZONA are discussed in "The Physiography of Arizona Valleys and the Occurrence of Groundwater", Technical Bulletin No. 77, Agricultural Experiment Station, University of Arizona, Tucson, Ariz.

NEW PUBLICATIONS

HOW TO ESTIMATE FOR THE BUILDING TRADES—By Gilbert Townsend, J. Ralph Dalzell and James McKinney. 629 pp. Published by American Technical Society, Chicago. Price $4.75.

DESIGN OF INDUSTRIAL EXHAUST SYSTEMS—By John L. Alden. 220 pp. Published by The Industrial Press, New York; Machinery Publishing Co., London. Price $3.

THE REFRIGERATING DATA BOOK—Fourth Edition—Vol. I—527 pp. Published by The American Society of Refrigerating Engineers, New York, N. Y. Price $4 in U. S.; $4.50 elsewhere.

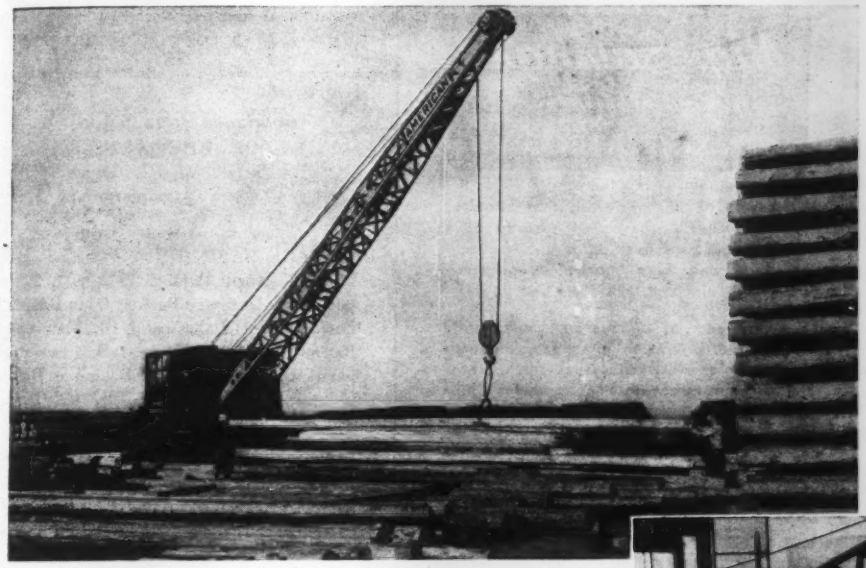
INTRODUCTION TO HIGHWAY ENGINEERING—Third Edition—By John H. Bateman. 442 pp. Published by John Wiley & Sons, New York; Chapman & Hall, London. Price $4.

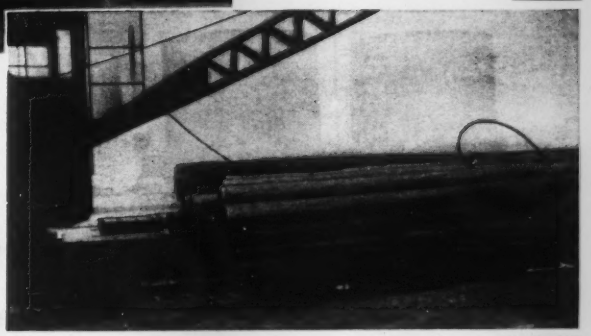
WATER SUPPLY ENGINEERING—Third Edition—By Harold E. Babbitt and James J. Doland. 690 pp. Published by McGraw-Hill Book Co., New York and London. Price $6.

WINTER AIR CONDITIONING—532 pp. Published by National Warm Air Heating & Air Conditioning Association, Columbus, Ohio. Price $3.00.

60 YEARS—My 60 Years in the Cast Iron Pipe Business—By William E. Clow. 140 pp. Published by James B. Clow & Sons, Chicago.

(*Continued on p. 90*)





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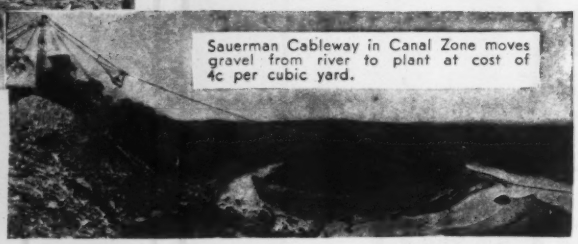
Small Sauerman Scraper produces aggregate for asphalt mix on paving contract. Plant is placed alongside bank and scraper drags sand down to hopper. Wages of operator and cost of gasoline total about $8.00 per day.

Sauerman Tower Machine above digs basin 1250 ft. long, and 360 ft. wide for sewage treatment plant. The bucket runs up a ramp hinged to front of tower and drops the material into a car-loading hopper.



Sauerman Cableway in Canal Zone moves gravel from river to plant at cost of 4c per cubic yard.

Big Savings
ON TOUGH EXCAVATING

When you have any work that requires moving materials beyond the reach of a crane boom or shovel dipper, it is a safe bet you can save money by using a Sauerman machine.

The first cost of a Sauerman machine is reasonable, operation is an easy one-man job, maintenance expense is small. Materials are excavated and hauled into place at an over-all cost of just a few cents per cubic yard handled.

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NEW PUBLICATIONS

(*Continued from p. 88*)

SALINITY OF THE CONNECTICUT RIVER—Parts I, II, III. Issued by the Works Progress Administration, Hartford, Conn.

DRAINAGE BASIN COMMITTEES' REPORTS—North Atlantic Basins; Chesapeake Bay Drainage Basins; Ohio Basins; Lower Great Lakes and St. Lawrence Basins; Pacific Northwest Basins. Prepared and published by Drainage Basin Committees, Washington, D. C. Price 10c each.

TRANSACTIONS OF THE MEETINGS OF THE INTERNATIONAL COMMISSIONS OF SNOW AND GLACIERS—804 pp. Published by Association Internationale D'Hydrologie Scientifique, Bureau du Secretariat, 6, Rue de Seine, Paris—VI.

GENERAL CARTOGRAPHY—By Erwin Raisz. 370 pp. Published by McGraw-Hill Book Company, New York and London. Price $4.

PROCEEDINGS OF THE TWENTIETH TEXAS WATER WORKS SHORT SCHOOL—143 pp. Published under the joint auspices of Texas Division, Southwest Section, A.W.W.A., Texas State Board of Health, and Texas A. & M. College, College Station, Tex.

STATISTICS OF UTILITIES PRIVATE AND MUNICIPAL (1937)—169 pp. Prepared and published by the Board of Public Utility Commissioners of New Jersey, Trenton.

RESEARCH—A NATIONAL RESOURCE—255 pp. Report of Science Committee to the National Resources Committee. For sale by the Superintendent of Documents, Washington, D. C. Price 50c.

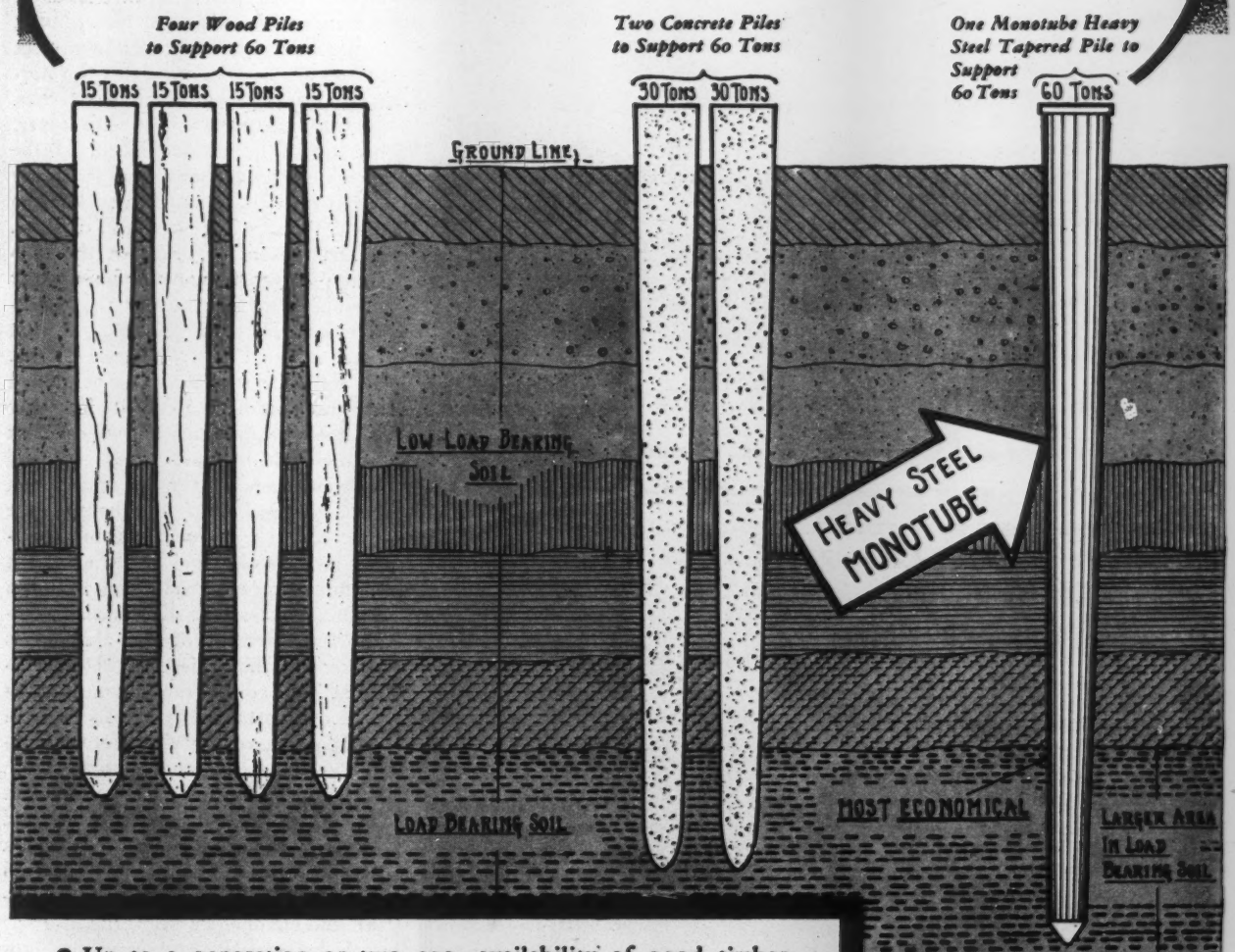
STAHLBAU-KALENDER—1939—547 pp. Published by Wilhelm Ernst & Sohn, Berlin, Germany. Price 3.50 RM.

PROCEEDINGS OF THE SECOND ANNUAL HIGHWAY AND STREET CONFERENCE—140 pp. Published by University of Oklahoma Press, Norman. Price $1.

URBAN HOUSING: A Summary of Real Property Inventories—By Peyton Stapp. 326 pp. Published by Works Progress Administration, Division of Social Research, Washington.

PUBLICATIONS—Fifth Volume—International Association for Bridge and Structural Engineering. 422 pp. Printed in German, French and English. Published by The General Secretariat of the Association, Zurich, Switzerland. Price 30 Fr.

Evolution of Pile FOUNDATIONS


Four Wood Piles to Support 60 Tons
15 TONS 15 TONS 15 TONS 15 TONS
Two Concrete Piles to Support 60 Tons
30 TONS 30 TONS
One Monotube Heavy Steel Tapered Pile to Support 60 Tons
60 TONS
GROUND LINE
LOW LOAD BEARING SOIL
LOAD BEARING SOIL
HEAVY STEEL MONOTUBE
MOST ECONOMICAL
LARGER AREA IN LOAD BEARING SOIL

● Up to a generation or two ago, availability of good timber, low cost of transportation and field labor, justified the use of 4 Wood Piles—in spite of their driving limitations—to support a foundation load of 60 Tons.

Depletion of sound timber, increasing costs and stricter requirements of permanence brought about the development of Concrete Piles of greater load-supporting ability, replacing 4 Wood Piles with 2 Concrete Piles to support the same foundation load.

And now—ONE MONOTUBE, heavy steel, cold rolled tapered pile, can be driven with assured safety to depths in high load-sustaining soil strata, (filled with concrete after driving), to actually develop a load-supporting value of 60, 80 or even 100 Tons with ample factor of safety and AT LESS COST. *Write for Catalog No. 68*

The UNION METAL MANUFACTURING CO.
Canton, Ohio

Working for the U. S. Engineer Office

BALTIMORE, MD.

2 UNION PILE HAMMERS

on a long cutoff wall, at Kingston, Pa.

Photo shows only one—but there are two on this job of flood control work, in charge of the Sub-office at Kingston. Union Pile Hammers are picked for fast, low cost driving because of their strength and simplicity. Their one piece frame, few parts, special metals and economy in steam or air consumption, make UNIONS the first choice of experienced contractors.

Send for Union Catalog—showing complete line of Hammers and other Union Contracting Equipment.

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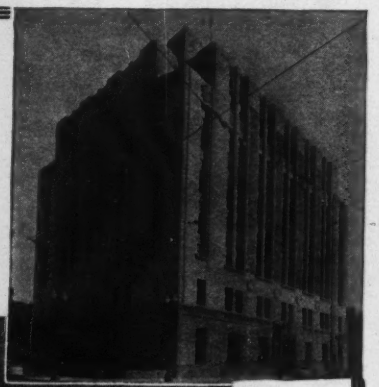
Important Telephone Exchanges Employ Sterling Standby Generator Sets

The deluge of telephone calls that follow any catastrophe—reporting—appeals for help—the many imperative instantaneous demands must be served.



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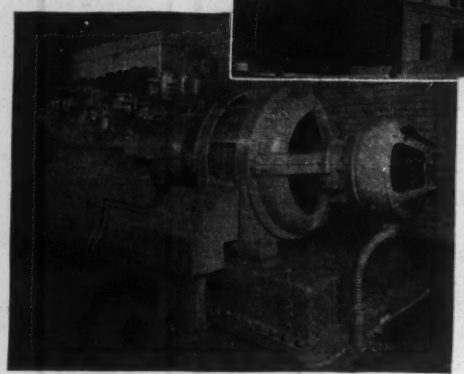
Internal Combustion Engines

When utility power fails, these quick starting emergency generator sets furnish auxiliary power instantly.

The special engineering required for a successful installation, is available.



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COMMENT AND DISCUSSION

(*Continued from page 79*)

width, depth, slope and cross-sectional area at a given stage, increasing from low to high stage. The proper size of these elements and the method of accomplishing the change to that size are the real engineering problems presented. Obviously on a large stream it is impracticable to actually reach this ideal river, but it is possible in many cases to correct the greatest variations from the normal. By working with rather than against the normal action of the river, much can be accomplished. If the forces of nature are guided rather than controlled they will assist in the development of an improved channel.

The present program on the Mississippi River being carried out under the able direction of General Ferguson includes not only cutoffs but other channel work between cutoffs. To date the result of this combined program has been a definite lowering of flood heights and an enlargement of the flood channel of the river. If this enlargement can be maintained and extended, it should be possible not only to continue the flood lowering already obtained but to extend it without increasing velocities and even reducing velocities if sufficient general enlargement of the channel is obtained. That this general enlargement is of considerable magnitude is well demonstrated by the fact that a comparison of the size of the bankfull channel between cutoffs from 1932 to 1937 shows an enlargement of 500,000,000 yd., or twice the total yardage removed from the Panama Canal. At least ¾ of this was removed by the river itself guided by the cutoff and channel work.

I believe all engineers are now ready to admit that when cutoffs are carefully planned on the Mississippi River and accompanied by improvement in reaches above and below, they do not produce violent changes in river regimen. If it takes years to determine the changes produced, they are obviously not violent. Changes in river length that have occurred since the cutoffs have been made are not excessive and for the first five years have shown a tendency to further shorten the river beyond that shortening obtained by the cutoffs. Observations must be continued from

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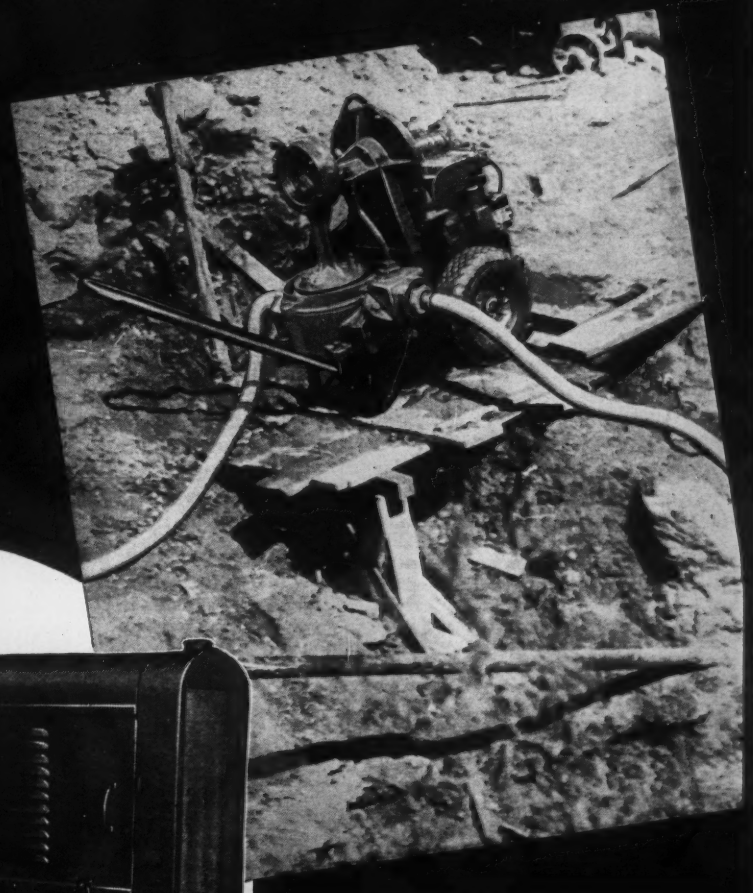

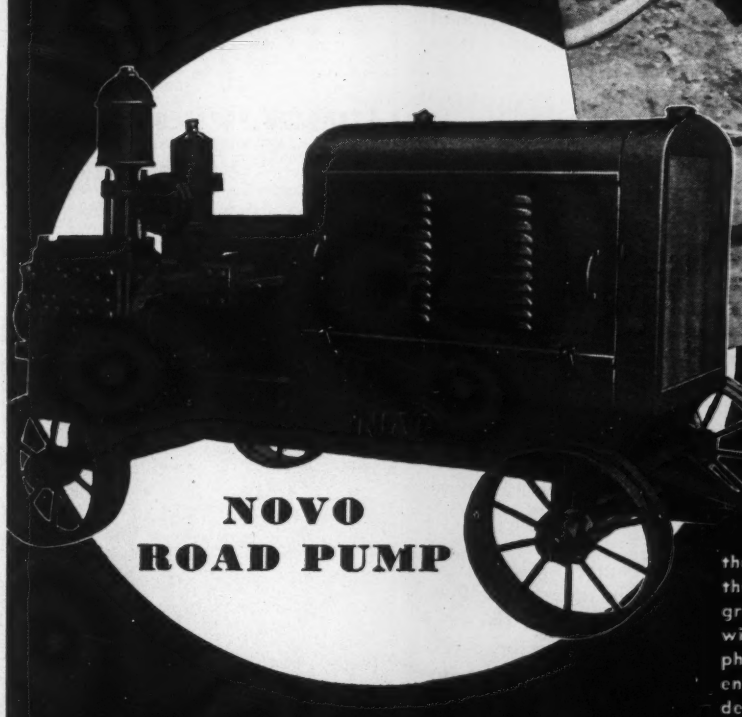

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The greatest Road Pump Novo ever built. A powerful pump that has been designed to take the most gruelling service.

ECONOMICAL OPERATION is assured by the Novo Water Governor which has been proven to be an economy on operating costs and a saver of pump and pipe lines.

A. G. C. Standard Ratings are easily met by this pump and the lower price will surprise you.

THE NEW DIAPHRAGM PUMP

Did you ever see anything neater than that new Novo Lift and Force Diaphragm Pump above? That isn't half of the news about this easy-to-handle, big-capacity, utility pump.

You know the old, never-fail operation of the diaphragm pump on tough pumping jobs—thick muddy water, heavily laden with sand, gravel, and debris—large quantities of air with intermittent pumping. The new Novo Diaphragm eats these jobs up—besides, it has the enclosed gearing and close-coupled modern design.

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Please send full information on the

New Novo Road Pump .....

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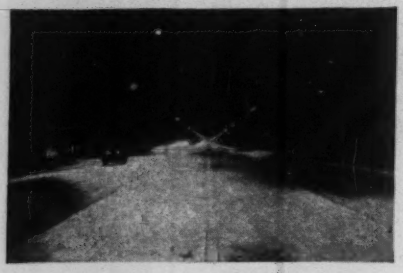
NIGHT ACCIDENTS REDUCED 85% ON UTAH HIGHWAY

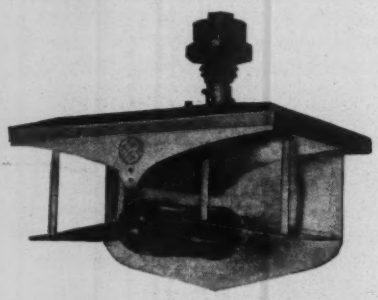


U.S. Highway 91 near Salt Lake City, Utah, lighted with G-E sodium luminaires

IN ONE year after G-E sodium lighting was installed on 3.4 miles of the most heavily traveled highway in Utah, there was only one night-traffic death. This represented an 85 per cent drop from the preceding year's total of seven night-traffic fatalities. Records similar to this have been made on many highways where G-E sodium luminaires have been installed.

County Commissioner Praises G-E Sodium Luminaires

J. B. Mullins, County Commissioner of Salt Lake County, said of the G-E lighting, "The sodium lights have proved to be all and more than was expected of them from a standpoint of economy of operation, ease of driving, and safety to pedestrians and automobile drivers."



G-E Type M-2 Sodium Luminaire

The General Electric Type M-2 sodium luminaire has been installed on highways in all parts of the country. It is highly efficient and distributes light over the roadway without producing objectionable glare. Sodium lighting may be the answer to a serious night-accident problem in your locality. For complete details about this or any other type of outdoor lighting, write to your nearest G-E sales office or to General Electric, Schenectady, N. Y.

GENERAL ELECTRIC

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year to year to follow the trends that develop.

The thought expressed in the *Engineering News-Record* editorial bears serious consideration. As the river has always been unstable, any works that do not increase this instability but have other benefits may be of sufficient permanence so that extension of these works at infrequent intervals may make them actually permanent. In other words, if it takes twenty years for a cutoff to regain one-half of its length, there is no engineering reason why another cutoff should not be made in the meantime and at least preserve if not extend the beneficial effect obtained by the first cutoff.

Time alone will tell the ultimate effect of the cutoff and channel improvement work on the Mississippi River. Whatever its ultimate effect, it has already paid dividends in flood protection. Controlling the 1937 flood alone was probably worth more than the cutoff system has cost to date.

GEORGE R. CLEMENS
Senior Engineer
Mississippi River Commission
Vicksburg, Miss., Jan. 4, 1939

• • •

Sewers in Quicksand

Sir: Having been initiated into the order of "Sewer Rats" at an early age and served apprenticeship under several old-timers who taught me the tricks of "grassing them up", I read with interest the methods employed by Messrs. Mirick and McDonald for laying sewers in quicksand as given in your issues of Aug. 18 and Nov. 17.

There are, of course, various kinds of quicksands, some more stable than others, and the stability of the sand together with the size of pipe generally determines the method to be employed. I can vouch for the effectiveness of Mr. Mirick's method and agree with him that a lower rate of ground infiltration will be had when a gravel-pack subgrade is employed. However, I have found this method slow and rather expensive, and unless I received a good price for the gravel in the form of extra compensation, I believe I would wind up the loser on the job.

For smaller sizes, up to 36 in., where conditions are very bad, I prefer to use the conventional scheme of using old or discarded sheeting

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UNSHAKO

The Nuts that can't shake loose

every place where other nuts fail to hold

Why take chances? Use "Unshako" Self-Locking Nuts exclusively on all your equipment that vibrates or shakes. The built-in locking ring is always on guard, ready to spring to life and grip the bolt or stud if the nut shows any tendency to back-off. "Unshako" Nuts are one-piece, easy to install, can be used over and over again. For more information, write—

STANDARD PRESSED STEEL CO.

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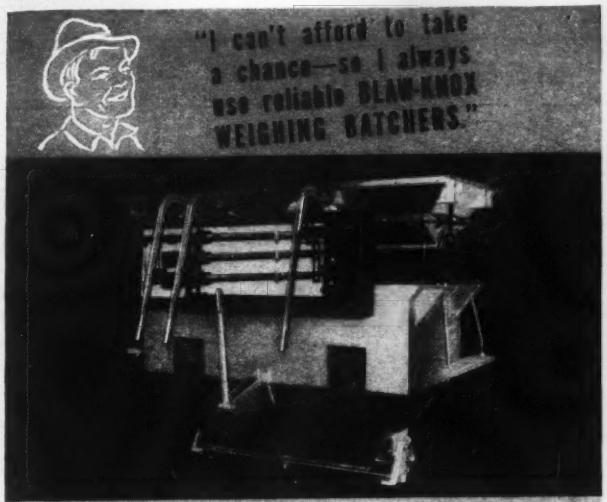
STEEL FORMS

Steel Forms for Tunnels, Sewers, Aqueducts, Walls.

Tunnel Shields - - Air Locks

ROBERT S. MAYO
Construction Equipment
LANCASTER, PA.



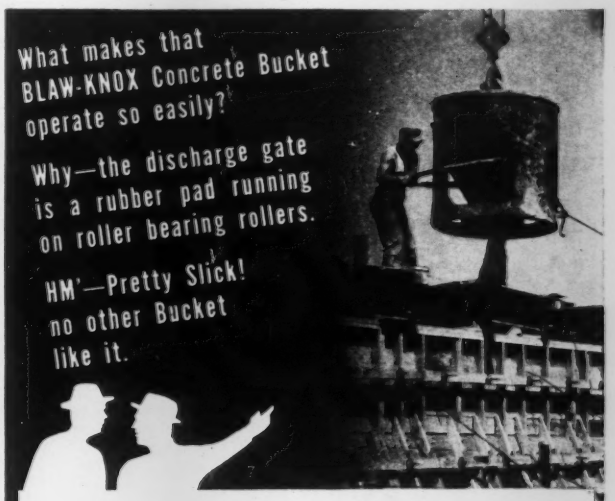
To quickly and accurately measure AGGREGATES, CEMENT AND WATER, Blaw-Knox Weighing Batchers are standard equipment in widespread use by road contractors, for general construction, material yards, and ready mixed concrete plants. They satisfy all modern specifications. Furnished for manual or automatic operation.

The reliability of Blaw-Knox Weighing Batchers is acknowledged by thousands of users. Send for Catalog No. 1566.

BLAW-KNOX DIVISION of Blaw-Knox Company
FARMER'S BANK BUILDING PITTSBURGH, PA.

9

BLAW-KNOX *Aggregates and Cement*
WEIGHING BATCHERS


What makes that BLAW-KNOX Concrete Bucket operate so easily?
Why—the discharge gate is a rubber pad running on roller bearing rollers.
HM'—Pretty Slick! no other Bucket like it.

• Controllable discharge, Blaw-Knox CONCRETE BUCKETS are a popular concrete placing unit. Used by contractors everywhere.

Send for a copy of the catalog on Blaw-Knox Concrete Buckets, No. 1586.

BLAW-KNOX DIVISION of Blaw-Knox Company
FARMERS BANK BUILDING · PITTSBURGH, PA.

BLAW-KNOX *Roller Gate*
CONCRETE BUCKETS

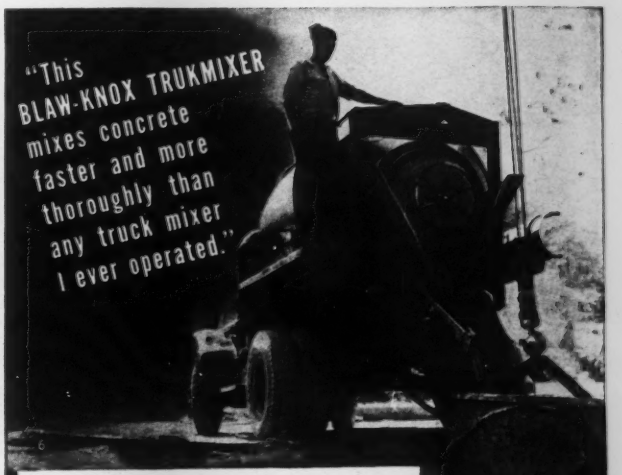
Only Blaw-Knox Batcherplants have hinged legs—a real feature for portability.

When leaving the job—fold up the legs, lower the bin onto a truck or car, and move. No need to dismantle the Weighing Batcher, the entire plant is an integral unit. Setting up the bin is just as easy. They are shipped from the factory that way.

See these interesting plants in Blaw-Knox Catalog No. 1566.

13

BLAW-KNOX BLAW-KNOX DIVISION · OF BLAW-KNOX CO · Farmers Bank Bldg Pittsburgh Pa
PORTABLE
BATCHERPLANTS



Users look at the details of construction and performance—then buy Blaw-Knox TRUK-MIXERS.

The desirable and popular features of Blaw-Knox Trukmixers and Agitators are completely illustrated and descibed in Catalog No. 1582. Send for your copy.

BLAW-KNOX DIVISION of Blaw-Knox Company
FARMER'S BANK BUILDING PITTSBURGH, PENNA

BLAW-KNOX
TRUKMIXERS *and Agitators*

● The Genuine ●
CROSBY CLIP
DROP FORGED STEEL
HOT GALVANIZED
Crosby Clips Hold
Rain or shine — Hot or cold; in any kind of service. Drop Forged Steel — Hot Galvanized. There is a CROSBY CLIP dealer near you with full stocks of all sizes.
Ask us for his name.

AMERICAN HOIST & DERRICK CO.
ST. PAUL, MINNESOTA
CHICAGO NEW YORK

LOW IN FIRST COST
HIGH IN QUALITY
LOW IN OPERATING AND MAINTENANCE COSTS
HIGH IN CAPACITY AND DURABILITY
LOCK JOINT
Reinforced Concrete
PRESSURE PIPE
LOCK JOINT PIPE COMPANY
AMPERE, N. J.

(News continued from p. 33)

MEN AND JOBS

M. L. Tower, formerly in the county engineer's office at Kitsap County, Wash., has been appointed city engineer of Port Orchard, Wash.

E. F. Frantz has been appointed assistant sanitary engineer in the Kentucky bureau of sanitary engineering. Frantz, a graduate of the University of Louisville school of civil engineering, has been connected for the past several years with the Louisville sewage commission.

Frank S. Bailey, who has been junior structural engineer for the city of Detroit on sewage disposal projects, is now on the staff of Metcalf & Eddy at Boston, working on the Rock Creek relief sewer project at Washington, D. C.

Norman W. McLeod, formerly research engineer for the Saskatchewan highway department, has joined the technical staff of Imperial Oil Co., Ltd.

M. J. Bahlin, contractor and former city engineer of Springfield, Ohio, has been made manager for PWA in Montgomery County, Ohio.

Armen H. Tashjian has been appointed consultant in charge of foundation engineering for the Union Metal Mfg. Co. with headquarters in Cleveland. He will specialize in steel pilings for foundations.

Warren H. Ridpath has resigned his post as district engineer in southeastern Ohio for the National Youth Administration to become junior management engineer for the U. S. Housing Authority at Washington.

Raymond R. Wieman, formerly assistant resident engineer for the U. S. Engineers on relocation work for the Dover Dam project in Ohio, has been appointed residential engineer for the National Youth Administration on the new regional work experience center near Leesville, Ohio.

Russell B. Millay, formerly in the Cheyenne office of the Wyoming highway department, has been appointed city engineer of Laramie, Wyo., to succeed E. K. Nelson, recently resigned.

James H. LeVan, assistant sanitary engineer for the U. S. Public Health Service, has been shifted from his post as officer in charge of the Scioto River investigation at Chillicothe, Ohio, and has been put in charge of the mobile mosquito control unit with headquarters at the Miami Beach quarantine station, Florida.

Fred G. Austin will resign his post as assistant director for Illinois of the WPA on July 1 to become executive manager of the St. Claire County, Ill., housing authority.

E. W. Hahn has been made county engineer of Chickasaw County, Iowa, to succeed F. R. Lyford who has resigned.

Loren C. Bishop, city engineer of Douglas, Wyo., and county surveyor of Converse County, was recently appointed state engineer of Wyoming to succeed John O. Quinn, effective Apr. 1.

Phillip D. Thurmond has been appointed city engineer of Fulton, Mo., to succeed John W. Cook, Jr., resigned. Thurmond has been city engineer of Fulton on a number of occasions in the past.

William R. Lazalier has been made county engineer of Butler County, Mo.

H. R. Helland and W. O. Washington have been named planning engineers at Laredo, Tex., for the state highway department.

Harry D. Metcalf has been appointed chief engineer in charge of maintenance in the Ohio highway department.

Harold Z. Hakes, safety director of Tiffin, Ohio, has been made resident engineer for the Ohio state highway department in Seneca, Sandusky and Ottawa Counties. Before taking his post at Tiffin, Hakes was for twelve years county engineer of Seneca County.

C. Robb DeGraff, for the past two years a division engineer for the WPA, has been made acting director of WPA Area No. 6 with headquarters in Utica, N. Y. DeGraff was formerly commissioner of public works of the city of Amsterdam, and has also been resident engineer of the Hudson River Regulating District.

C. S. Krieger, maintenance engineer of the Oklahoma state highway department, has been named prequalification engineer.

Albert R. Olpin was last month appointed director of industrial research and field director of the engi-

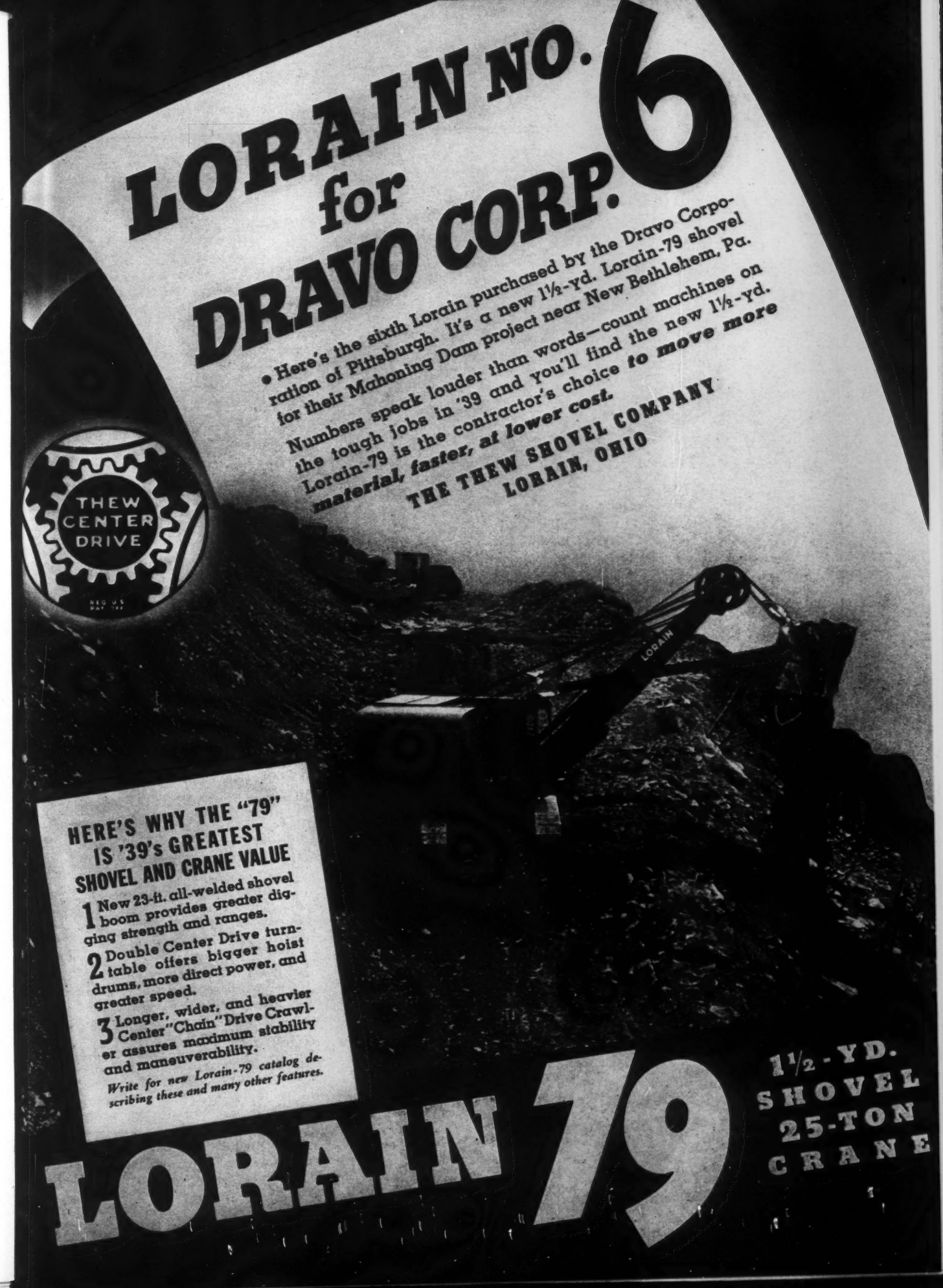
LORAIN NO. 6 for DRAVO CORP.

• Here's the sixth Lorain purchased by the Dravo Corporation of Pittsburgh. It's a new 1½-yd. Lorain-79 shovel for their Mahoning Dam project near New Bethlehem, Pa.

Numbers speak louder than words—count machines on the tough jobs in '39 and you'll find the new 1½-yd. Lorain-79 is the contractor's choice ***to move more material, faster, at lower cost.***

THE THEW SHOVEL COMPANY
LORAIN, OHIO

THEW CENTER DRIVE
REG. U.S. PAT. OFF.



HERE'S WHY THE "79" IS '39's GREATEST SHOVEL AND CRANE VALUE

1 New 23-ft. all-welded shovel boom provides greater digging strength and ranges.

2 Double Center Drive turntable offers bigger hoist drums, more direct power, and greater speed.

3 Longer, wider, and heavier Center "Chain" Drive Crawler assures maximum stability and maneuverability.

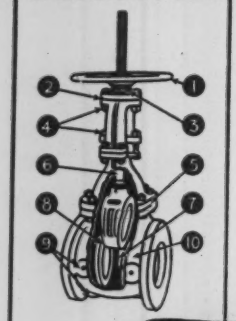
Write for new Lorain-79 catalog describing these and many other features.

LORAIN 79

1½-YD. SHOVEL
25-TON CRANE

JENKINS
IRON VALVES
COST NO MORE

Check the Features of this O. S. & Y. Gate



1 Handy-Grip Wheel
2 One-Piece Yoke Assembly
3 Convenient Yoke-Cap Oil Hole
4 Time-Saving Bolts
5 Long-Life Asbestos Gasket
6 Extra Strength Spindle
7 Self-Aligning Wedge Guides
8 Renewable Bronze Seat Rings
9 Six Convenient Bosses
10 Iron *Exceeds* A.S.T.M. Standards

A TYPICAL JENKINS IRON VALUE
THERE ARE 101 OTHERS!

1864 JENKINS 1939
DIAMOND ANNIVERSARY

JENKINS BROS. 80 White Street, New York, N.Y.
Bridgeport, Conn. Atlanta, Boston, Chicago, Houston
Philadelphia, Montreal, Canada, London, England

(*News continued from p. 41*)

MEN AND JOBS

FRANK B. WALKER, for some years chief engineer of the Eastern Massachusetts Street Ry, and formerly active in railroad work in the west, has been appointed consulting engineer for the line. Walker has opened offices in Boston for the general practice of civil engineering.

E. N. TODD, former chief highway engineer of Kentucky, has been made resident engineer for the Louisville Municipal Housing Commission, on its $4,000,000 low-rent housing project.

K. B. WOODS has resigned his post as assistant engineer in charge of the soils department of the Bureau of Tests of the Ohio Department of Highways, to become assistant director of the Joint Highway Research project in Purdue University with the title of assistant professor of highway research. The project is sponsored jointly by Purdue and the Indiana Highway Commission. Woods taught for three years at Ohio State University before going with the highway department.

M. H. BAHLIN, supervisor of WPA projects in Clark County, Ohio, and formerly city engineer of Springfield, has been appointed manager for the PWA in Montgomery County.

ROBERT SONNTAG has resigned his post as inspector at Fresno Dam for the U. S. Bureau of Reclamation to become a junior engineer for the U. S. Engineers on flood control work in the Pittsburgh district. Sonntag is a graduate of Montana State College.

ROBERT H. CHAMBERS, formerly with the Metropolitan Sand & Gravel Co. of New York City, has opened offices in New York to offer a general drafting service.

WEBSTER L. BENHAM, former chief engineer for the WPA in Oklahoma has been made manager of the Oklahoma Concrete Pipe Association.

W. BETHEL PERRY, for the past four years engineer of design and construction for the city of Osawatomi, Kans., has become resident engineer for the consulting firm of Albert C. Moore & Co. of San Antonio and Joplin, Mo. Before joining the Osawatomi staff, Perry worked for five years for the State Highway Commission of Kansas.

JOHN D. MILLAR has been appointed district engineer for the Ontario Department of Highways.

ARTHUR M. FIELD, city manager of Winchester, Va., has been appointed director of the industrial development division of the Memphis, Tenn., Chamber of Commerce. S. Lee Grant, Winchester superintendent of public works, is acting city manager.

FRANK H. HIBBARD, chief engineer since 1931 of the Quebec Central Ry., has been appointed superintendent and chief engineer. Hibbard has been with Quebec Central since 1913 and worked for five years previously for the Transcontinental.

CLARENCE E. BARDSLEY has joined the staff of the civil engineering department at Oklahoma Agricultural and Mechanical College as professor of civil engineering in charge of courses in hydraulic engineering. Bardsley was formerly professor of hydraulic engineering at the University of Missouri.

JEROME C. ZUFELT, filtration engineer of Sheboygan, Wis., has been made superintendent of the water department there to succeed the late Arthur H. Miller. Zufelt graduated in 1926 from the University of Wisconsin. Before joining the Sheboygan staff, he was resident engineer on construction of the plant there for Jerry Donohue Engineering Co.

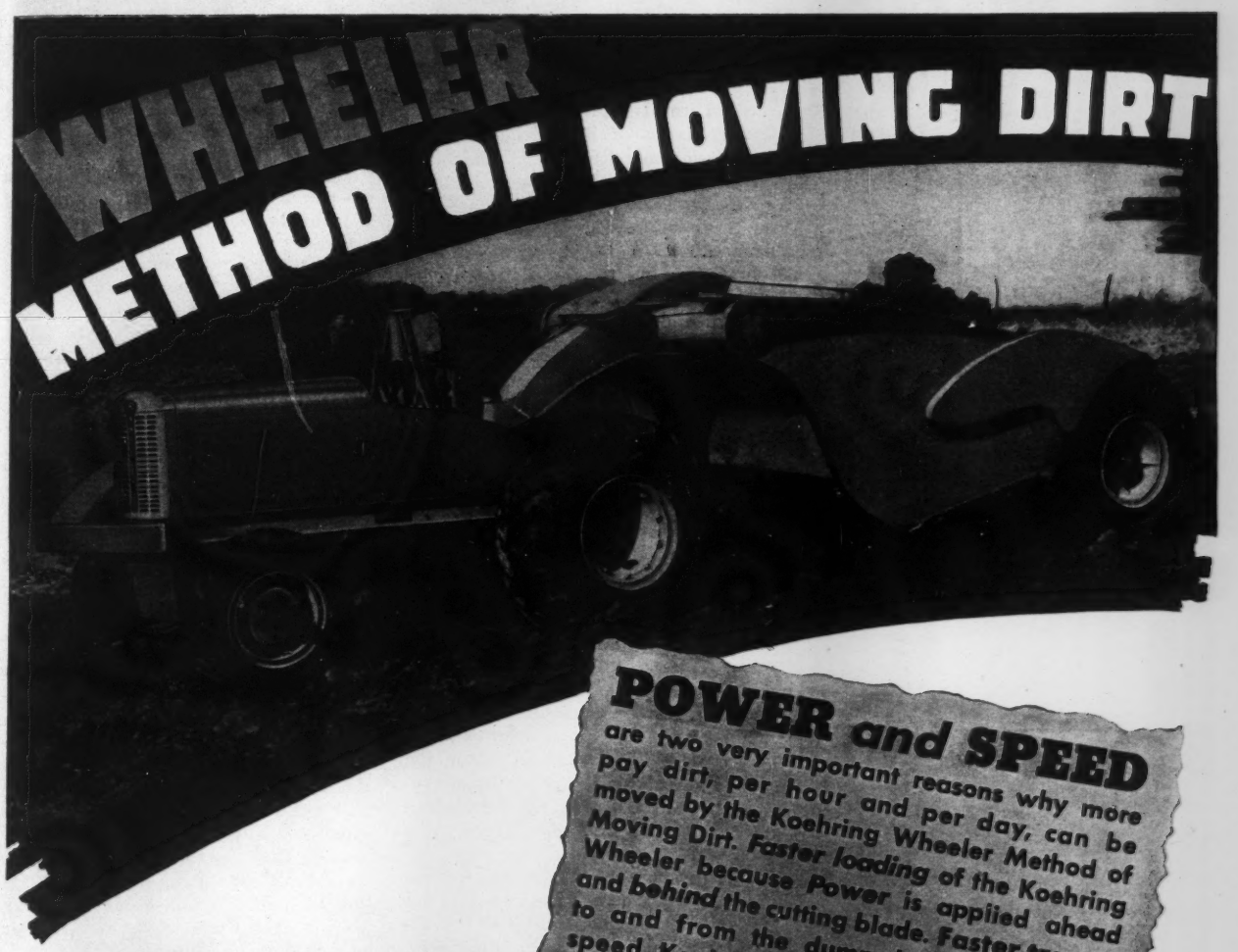
DON G. NICHOLS, WPA field representative at Savannah, has been made chief engineer of the Georgia WPA.

R. J. HARPER has been assigned to represent the Pennsylvania highway department on the staff of the Pennsylvania turnpike commission.

D. A. WEIR is field engineer for Doyle & Russell, Richmond contractors, on construction of 21 school buildings in Morgantown and Monongahela counties, W. Va. He was formerly architect's representative for the state of West Virginia and earlier was field engineer for the Hunkin Conkey Construction Co. of Cleveland.

T. C. FORREST, JR., has withdrawn from the Dallas consulting firm of Myers, Noyes & Forrest. The business of the firm will be continued as Myers & Noyes.

KOEHRING



Controlled spreading and dumping because of movable front apron and possible 21" ground clearance of body when traveling.

POWER and SPEED are two very important reasons why more pay dirt, per hour and per day, can be moved by the Koehring Wheeler Method of Moving Dirt. *Faster loading* of the Koehring Wheeler because *Power* is applied ahead and *behind* the cutting blade. *Faster travel*, to and from the dump, because of high speed Koehring Tractor . . . You should know about this newest method of dirt moving. Write today for more information.

KOEHRING COMPANY
MILWAUKEE · WISCONSIN

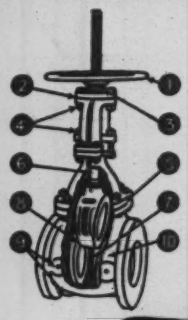
Streamlined for high speed travel. Simple cable arrangement with minimum of sheaves. Spring mounted push connection contacts the crawler push tractor.

KOEHRING HEAVY DUTY

HEAVY-DUTY CONSTRUCTION EQUIPMENT

JENKINS
IRON VALVES
COST NO MORE

Check the Features of this O. S. & Y. Gate



1 Handy-Grip Wheel
2 One-Piece Yoke Assembly
3 Convenient Yoke-Cap Oil Hole
4 Time-Saving Bolts
5 Long-Life Asbestos Gasket
6 Extra Strength Spindle
7 Self-Aligning Wedge Guides
8 Renewable Bronze Seat Rings
9 Six Convenient Bosses
10 Iron *Exceeds* A.S.T.M. Standards

A TYPICAL JENKINS IRON VALUE
—THERE ARE 101 OTHERS!

1864 1939
DIAMOND ANNIVERSARY

JENKINS BROS. 80 White Street New York, N.Y.
Bridgeport Conn. Atlanta Boston Chicago Houston
Philadelphia Montreal Cranford London

(*News continued from p. 39*)

MEN AND JOBS

WILLIAM T. STAATS, formerly chief resident engineer for PWA in western Pennsylvania, has been appointed assistant chief engineer of the Pennsylvania Turnpike Commission. He will be in charge of liaison between the commission and RFC, PWA and other interested agencies. Since Dec. 15, Staats has been PWA representative on the turnpike project. Before taking his post with PWA, he was in the general contracting and heavy construction industry for twelve years. He graduated from Lehigh University in civil engineering in 1918.

JOSEPH E. ENGLISH, director of public works in Trenton, N. J., has been appointed city manager there to succeed Paul Morton, resigned. English has been connected with Trenton's engineering department for 28 years and earlier was in the engineering department of the Baltimore & Ohio R. R. He is a graduate of Rensselaer Polytechnic Institute and also attended Lehigh University.

O. J. BALDWIN is now senior hydraulic engineer on the staff of the National Resources Committee in Washington. He was previously assistant professor of civil engineering at the University of Iowa, having been connected with the faculty there for about ten years. He had also, since 1936, been serving as chief engineer and planning engineer of the Iowa State Planning Board and earlier he had worked for the Ohio state highway department and the U. S. Engineers. Baldwin graduated from Ohio State University in 1929.

H. E. EISIMINGER has been district maintenance engineer at Harrisburg for the Pennsylvania highway department.

HARVEY W. GEHR is assistant district engineer at Indiana, Pa., for the highway department.

J. PAUL AMBLER has been named assistant district engineer at Harrisburg for the state highway department.

H. S. GAHAGAN is district construction engineer at Williamport, Pa., for the highway department. Warren K. Myers is assistant chief maintenance engineer of Harrisburg for the Pennsylvania highway department.

ROBERT L. MACDOUGAL has resigned his post as chief engineer in Georgia for the WPA to become technical adviser to the Atlanta Housing Authority.

DON G. NICHOLS, WPA field representative at Savannah, has become chief engineer for WPA in Georgia.

DOUGLAS CORNELL has retired from his post as chief structural engineer of the Buffalo, N. Y., bureau of buildings.

EDWARD D. SEYMOUR, civil engineer for the Socony Vacuum Co., has been made Chevalier of the Order of the Crown of Italy for his work in directing construction of an oil refinery in Naples.

JAMES JOHNSON, assistant superintendent of the Elgin, Ill., sanitary district, has been made superintendent to succeed the late E. E. Smith.

A. J. LITTLE, JR., has been appointed assistant state administrator for WPA in Florida. Little has been in federal relief work since 1933, when he became field engineer for PWA.

A. H. HINKLE has left his post as director of the Kentucky Rock Asphalt Institute and has become district engineer for The Asphalt Institute, with offices in Cincinnati. Hinkle, a graduate of Ohio State University, was for about eight years deputy highway engineer of Ohio and for thirteen years superintendent of maintenance for the Indiana Highway Commission. He was for a time state engineer for PWA in Indiana until he joined the Kentucky Rock Asphalt Co. in 1934. A year later he joined the Kentucky institute.

ALBERT A. BRENSLEY has resigned his post as superintendent and sanitary engineer in the department of sewerage and sewage treatment of the city of Kankakee, Ill., to open offices there to practice consulting engineering. He will specialize in sewage treatment works and sewers.

W. F. WAY and A. S. MCLEAN have formed a partnership which has taken over the contracting business of Stuart Cameron & Co. of Vancouver.

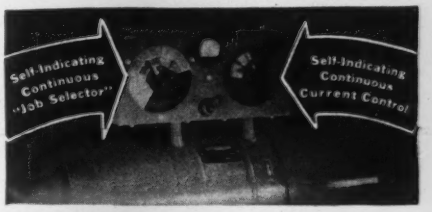
HARRY A. WORTHAM has been appointed acting regional director for PWA Region 3, with headquarters at Atlanta, to succeed Howard T. Cole, resigned. Wortham has been with PWA since 1934, when he became state engineer inspector for Kentucky and Tennessee, and earlier was associated with the U. S. Engineers.

PLUGGING FOR PROGRESS WITH POP AND LAD

WELDING in the WIND

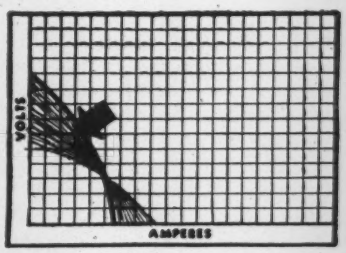
How you can set the *"Shield-Arc"* for peak performance under *all* working conditions

1 JOB. Structural steel erection with $^{3}/_{16}$-inch electrodes. A stiff March wind blows at the welding arc, causing its length to vary.

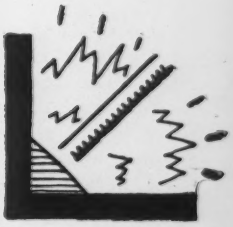


2 WELDER. New *"Shield-Arc"* Welder with Self-Indicating "Job Selector" and Self-Indicating Current Control.

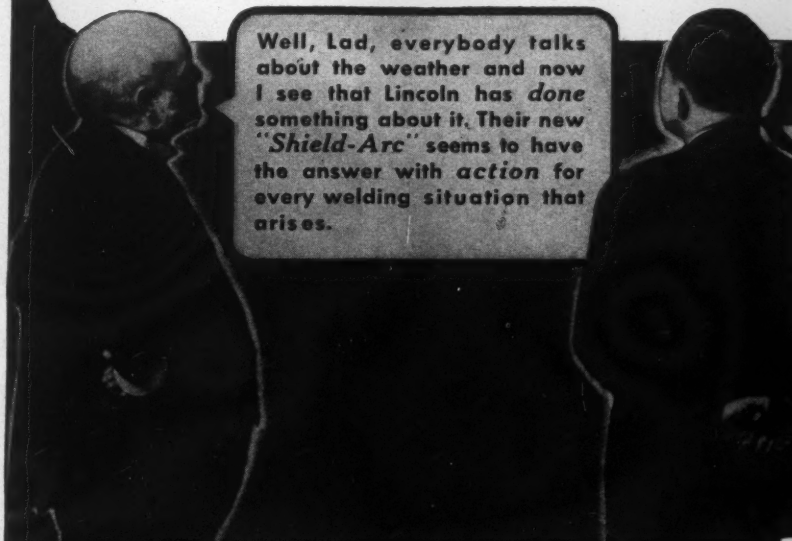
3 SET. Normal Range setting of "Job Selector" gives a TYPE of electrical output that is ideal for non-uniform conditions such as welding in the wind.



4 STEEP. Here's the "picture" of the TYPE of current you get. Volt-ampere curve is steep. Changes in arc length due to blow have little effect on amperage and arc intensity.



5 STEADY. Flow of weld metal is uniform. Spatter is minimized. Welding speed is high because arc is easy to handle. Result: Costs are low. Quality is high.



Well, Lad, everybody talks about the weather and now I see that Lincoln has *done* something about it. Their new *"Shield-Arc"* seems to have the answer with *action* for every welding situation that arises.

Right, Pop. Welding men want *action* and they get it *quick* with this new welder because its control is Self-Indicating and Continuous. I could tell you about its 30 other features too. But you should see it in action! Mail the coupon.

Largest Manufacturers of Arc Welding Equipment in the World

THE LINCOLN ELECTRIC COMPANY

CLEVELAND, OHIO

THE LINCOLN ELECTRIC CO., Dept. F-580, Cleveland, O.
☐ I'd like to see the new *"Shield-Arc"* in action.
☐ Send free Bulletin 412.

Name _____ Position _____
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Address _____
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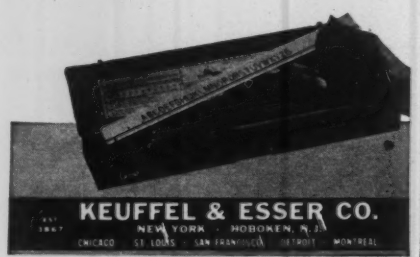
ACCURATE, uniform lettering — done with speed and ease—that is Leroy's contribution to the finished appearance of your drawing.

A Leroy set consists of patented templates, a simple scriber and foolproof, tubular pens. Each template produces both vertical and slanting letters, and numerals. Complete, finished letters are formed in one operation. No guide lines, no preliminary roughing in. The work is performed well above the template, in full view of the operator, there is no danger of smearing when the template is removed.

There are templates and pens of all sizes—sold singly or in sets. You make your selection to fit your own standards and requirements. Prices are moderate.

Add Leroy lettering to your drafting room equipment. Your K & E dealer will be glad to arrange a demonstration—or write us for Booklet No. 65 and price list.

K & E LEROY
REG. U. S. PAT. OFF.
LETTERING SETS



GEORGE M. MONTGOMERY has been appointed resident engineer in Mahoning and Stark counties for the Ohio highway department.

C. C. CARLSON has been appointed acting district engineer for the South Dakota state highway commission with headquarters at Rapid City to succeed J. H. Lake, who has been made a member of the state highway commission.

JAMES MCMILLEN has been appointed maintenance engineer for the Ohio Highway department in Richland county to replace Arthur Fletcher, resigned.

ELWOOD T. NETTLETON has resigned the post which he had held for fourteen years as engineering sales manager of the New Haven Trap Rock Co. to become engineering director and secretary of the New York State Crushed Stone Association, succeeding R. L. Litehiser, resigned. Since his graduation from the Sheffield Scientific School at Yale University in 1921, Nettleton has been assistant superintendent of highways in Darien and engineer for the Pennsylvania highway department and the U. S. Bureau of Public Roads. He is president of the Connecticut Society of Civil Engineers.

ELLWOOD D. POWERS, Newark, N. J. consulting engineer, has formed a partnership with Richard P. Dee to practice consulting engineering under the name of Powers & Dee.

NORMAN B. C. STITELER, field engineer for the Portland Cement Association at Harrisburg, has left that post to become general agent for the Coal Operators Casualty Co., a workmen's compensation firm.

FRANK G. CAMPBELL, special engineer for the Elgin, Joliet & Eastern R. R., has been appointed assistant chief engineer to succeed F. H. Masters, who recently became chief engineer.

HERBERT A. WILLIAMS, for twenty years superintendent of highways in Broome County, N. Y., has resigned because of ill health.

MEETINGS

CONCRETE REINFORCING STEEL INSTITUTE, annual meeting, Forest Hills Hotel, Augusta, Ga., Apr. 20–21.

AMERICAN SOCIETY OF CIVIL ENGINEERS, spring meeting, Hotel Patten, Chattanooga, Tenn., Apr. 19–22.

VIBER COMPANY
CONCRETE
VIBRATION

MODEL 18

—for small work, sections 4" or less in thickness. Such as concrete residences, bridge hand rails, small culvert head walls, concrete pipe, water meter boxes, catch basins, etc.

Will compact concrete against Plaster of Paris inserts, intricate forms; handy in laboratory. Flexible casing; working depth over 10 ft. Net weight 21½ lbs.

There is an electrically or pneumatically operated VIBER VIBRATOR for each specific type of concrete construction.

Write for complete data today.

VIBER COMPANY
LOS ANGELES, CALIF.

Cut MOVING AND MIXING Costs

With Modern Portable Bituminous Mixing Plants

MODEL P-A PLANTS
in THREE SIZES
2000-3000 and
4000-lb. MIXERS

Write for Bulletin T-260

HETHERINGTON & BERNER INC.

Facts that MUST be faced!

. . . IF YOU WANT LOWEST COST PER YEAR IN PAVEMENT SERVICE

Has lowest maintenance and longest life

•

A modern, even, travel-surface for traffic

•

High salvage after unusually long service

•

Withstands both weather and traffic damage

•

Pre-manufactured surface; easily inspected

•

The hardest, densest and toughest material

•

Arrests deterioration of base courses

•

Easily repaired with simple hand tools

•

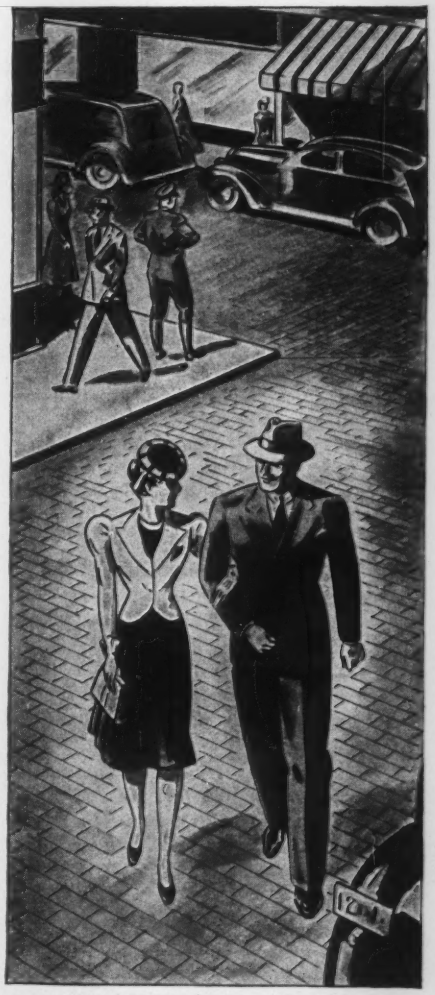
Amply visible; no glare by day or night

•

Permits Built-in markers for traffic lanes

•

Has the only factory-built safety surface



Whether you are paving a trunk-line highway or an obscure residential street, it is true economy to use brick.

It is much more resistant to weather damage to which all pavements are necessarily exposed. Brick is *too* tough, *too* indestructible to be destroyed by weather and traffic combined!

The greater your mileage of brick, the less interruption to traffic. And less pressure for repairs and reconstruction costs.

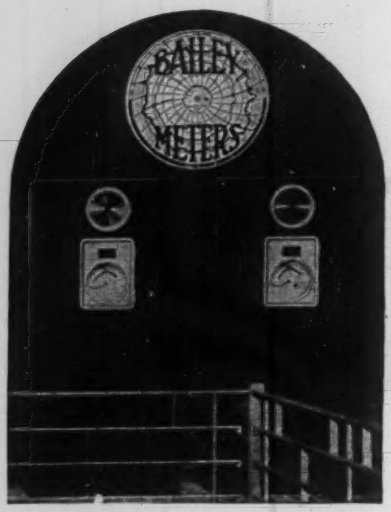
Brick has been made and used for more than 50 centuries. Yet in only the last decade many improvements have been made in its manufacture. And in the technique of using brick in pavements, more progress has been made than in all the years before!

You can build your community a brick pavement today that will far exceed even the unmatched performance of brick pavements of the past.

For further information, write to National Paving Brick Manufacturers Association, National Press Building, Washington, D. C.

BRICK

FOR NEW CONSTRUCTION OR RESURFACE WORK



When You Specify

Meters and Recorders

Be Sure To Demand

•ACCURACY •RELIABILITY
•SOUND ENGINEERING
•MODERN APPEARANCE

Regardless of whether your problem calls for the use of a Venturi Tube, Weir, or Flume, you can depend on Bailey Meter Company to design and construct both the primary element and the register for maximum accuracy.

A vast amount of experience gained from thousands of installations of metering equipment, together with extensive experimental work in our own hydraulic laboratory and in the laboratories of the Ohio State University, Cornell University, Case School of Applied Science and other institutions, is back of every Bailey Primary Element.

The reliability of Bailey Meters and Recorders is attested to by the fact that thousands of dollars worth of steam and water are sold monthly and billed solely on the basis of readings from Bailey Meters.

No small share of the accuracy and reliability of Bailey Meters is due to the conservative engineering policy of the Company. New ideas and designs are not offered for sale until they have been thoroughly tested both in the laboratory and in actual service.

Bailey Meters, Recorders and Controllers present a thoroughly modern yet conservative appearance.

Write for your copy of Bulletins No. 301 and 302, describing Bailey Fluid Meters for steam, liquids, gases, sewage, sludge, and compressed air. MU-16

BAILEY METER • COMPANY •

1029 Ivanhoe Road, Cleveland, Ohio

BAILEY METER COMPANY LTD., MONTREAL

(News continued from p. 49)

MEN AND JOBS

KARL R. KENNISON has been made chief engineer of the Massachusetts metropolitan district water supply commission, succeeding the late Frank E. Winsor, under whom he served as assistant for several years.

STANLEY M. DORR has been appointed assistant chief engineer of the district water supply commission.

CHARLES L. COBURN has been made principal designing engineer for the district.

FREDERICK T. MAVIS, head of the department of mechanics and hydraulics at the University of Iowa, has been appointed head of the department of civil engineering at Pennsylvania State College, effective in June.

T. M. LOWE, associate professor of civil engineering at the University of Florida, has resigned to head the civil engineering department of Alabama Polytechnic Institute.

I. W. L. SAWYER, assistant professor of civil engineering at the University of Florida, has been promoted to associate professor.

C. D. TOMLINSON has been appointed executive administrative assistant in the Florida WPA Administration. Tomlinson was formerly sales representative in charge of operations in northern Florida.

ALBERT W. WENTHE, engineer for the Fruin-Colnon Contracting Co. of St. Louis, has been promoted to the position of director and treasurer of the company.

WALTER WINTERS, formerly Whatcom County engineer at Bellingham, Wash., has been appointed engineer of Douglas County.

WILLIAM S. HINDMAN, connected with the bureau of bridges and railroad crossings of the Ohio highway department since 1929, has been named acting chief of the bureau to succeed J. R. Burkey.

T. J. NELSON, formerly with the Washington state highway department, has been appointed junior engineer in the topographic department of the U. S. Geological Survey at Sacramento.

D. M. FAIRES, regional engineer for the Idaho highway department at Coeur d'Alene, has been made state maintenance and construction engineer with headquarters at Boise to succeed A. D. Stanley, recently retired.

P. E. OXLEY has been appointed district engineer at Boise for the Idaho highway department.

L. L. FLINT who has been maintenance engineer at Shenandoah for the Iowa state highway commission for the past six years has resigned to become managing director of the Iowa Engineering Society. Flint is a past president of the society.

WILLIAM N. THORPE has resigned his post as city planning director of Los Angeles.

HUBBER B. SMUTZ, zoning engineer in the city planning department of Los Angeles, has been made acting city planning director to succeed W. N. Thorpe.

GEORGE W. REAR, JR., has been appointed assistant supervisor of bridges and buildings for the Southern Pacific R.R., with offices at Tucson.

DAVID R. MILLER has resigned his post as superintendent of the Kokomo, Ind., sewage disposal plant. Miller was formerly city engineer of Michigan City.

ALBERT V. SIELKE, formerly consulting engineer for the New York City department of parks, has opened new offices in New York.

ROBERT C. DISQUE, dean of the school of engineering at Drexel Institute of Technology, has been appointed educational consultant on the organization of a cooperative plan of education to be established at the new institute of technology at Northwestern University. He assumes the place left vacant by the death of the late Herman Schneider.

CAPT. RALPH WHITMAN, U.S.N., has been advanced to the rank of rear admiral in the civil engineering corps to succeed Rear Admiral Ralph M. Warfield.

WALTER JOHNSON, former city engineer of Abilene, Kan., has been appointed city manager there.

F. S. POORMAN, engineer of design and specifications for the Pennsylvania Turnpike Commission, has been promoted to the position of assistant to the chief engineer. Poorman had been connected with the Pennsylvania highway department for fourteen years, and when he left the department to go with the turnpike commission be held the rank of headquarters office engineer.

E. G. KINNEY, district highway engineer for the Pennsylvania highway department, has been appointed engineer of design and specifications for the turnpike commission, to succeed F. S. Poorman.

T. E. RILEY, for the past 14 years county engineer of Jackson county, Iowa, has been made engineer for Worth county.

JOHN C. MCNICHOL, for 20 years superintendent of the water department of Lake Forest, Ill., has been made city manager there.

ALFRED C. CALLEN, head of the department of mining and metallurgical engineering at the University of Illinois, has been made dean of the College of Engineering there.

ARTHUR T. IPPEN has been promoted to the rank of assistant professor of civil engineering at the University of Illinois.

THEODORE SHOEMAKER is on temporary leave of absence from his post with the Standard Bitulithic Co. of New York due to ill health. For the same reason he has resigned his post as president of Warren Northwest, Inc. of Portland. Shoemaker has been associated with Warren Bros. and its subsidiaries ever since he left the University of Pennsylvania in 1920, except for a period from 1926 to 1931 when he was with the MacDougald Construction Co. of Atlanta.

F. W. HOY has been appointed senior resident engineer at Harrisburg headquarters of the Pennsylvania highway department.

HENRY W. STOVER has been made assistant district construction engineer in District No. 3, and Roy J. Brosius is district township engineer there. Ralph A. Moore has been made project engineer in District No. 7 and Leroy C. Edkins has been appointed assistant district construction engineer in District No. 9.

JOHN D. QUINN, former state engineer of Wyoming, has been appointed resident engineer-inspector for PWA at Sheridan on a sewer and sanitation project there.

WILLIAM P. NEMMERS and Roy L. Clark have opened offices at Des Moines, Iowa, to carry on a general engineering project under the firm name of Nemmers & Clark. Nemmers was for 23 years chief engineer of the Marsh Engineering Co., was assistant to the chief engineer for the CWA in Iowa and for the past four years has been connected with the land utilization division of the U. S. Department of Agriculture. Clark was formerly associated with the Marsh firm and later with Charles L. Main, Inc. of Boston.

MARMON-HERRINGTON

All-Wheel-Drive

THE TRUCK THAT HAS

"WHAT IT TAKES"

ON CONSTRUCTION JOBS

● Most any good truck can give a satisfactory account of itself with ordinary loads on the broad, smooth level highway. But when loads are extra heavy, and deep, loose sand, mud or snow is encountered, even the biggest and best of conventional drive vehicles give up in futile wheel spinning, skidding and stalling. When extra steep and slippery hills are reached they simply can't make the grade.

Greatly Increased Traction

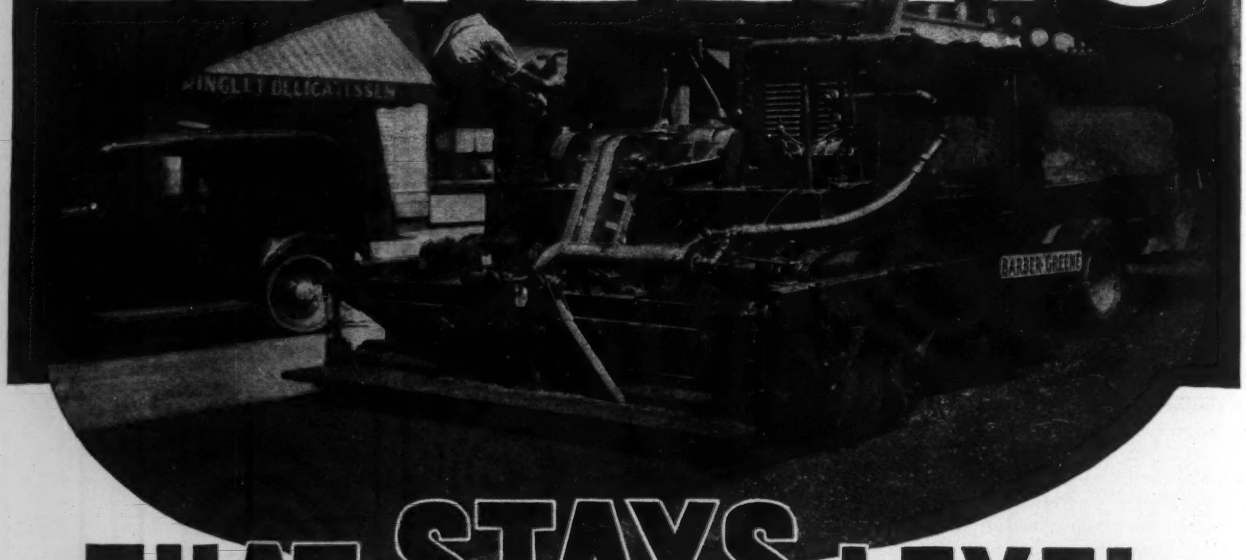
But here are trucks that are different. Different as day and night. Note the powerful *front driving axle* on the Marmon-Herrington *All-Wheel-Drive* pictured above. No wonder highway construction and maintenance men, logging contractors, pit, quarry and colliery operators call these the "going-est" trucks they ever saw!

With power and traction on *all wheels,* lower gear ratios, and other engineering advantages exclusive with Marmon-Herrington *All-Wheel-Drive* heavy duty vehicles and converted Fords, these vehicles have the ability to *go places and do things no other vehicles would dare attempt.* Let us send literature and prices. You will be amazed at the performance, as well as the money-making and money-saving possibilities in Marmon-Herrington *All-Wheel-Drives.* Cable address, MARTON, Indianapolis, Indiana.

MARMON-HERRINGTON COMPANY, INC.

INDIANAPOLIS, INDIANA, U.S.A.

LEVELING



THAT STAYS LEVEL

THE common goal in all road building is a permanently smooth riding surface. Bituminous finishing methods have gradually improved, but even with expensive forms for leveling, the surface would not stay level under rolling and traffic. There was more compaction over the low spots, or in the thicker portions; and variations in compaction due to uneven fluffing. The Barber-Greene Finisher was developed to overcome this problem. Hundreds of miles of level road throughout the country testify to its complete success.

Its ingenious leveling principle has established a new standard of excellence in bituminous road construction. But the perfection of its leveling principle would be worthless without the exclusive Barber-Greene Tamping—which makes the road *Stay Level.* The Barber-Greene Levels and Tamps simultaneously. It *Compacts* the material down to the correct level. It *Automatically* compresses more material into the depressions. The Barber-Greene and only the Barber-Greene has this ingenious leveling principle coupled with Tamping.

The new 36 page Barber-Greene Finisher Booklet clearly explains and illustrates the Leveling and Tamping Principles. Also, the Full Crawler Traction, the 5 Ton Receiving Hopper, the Dual Controls, and the Versatility of this Barber-Greene. Phone, write, or wire for your copy. There is no obligation.

39-22

BARBER-GREENE COMPANY, 422 West Park Avenue, Aurora, Illinois, U. S. A.

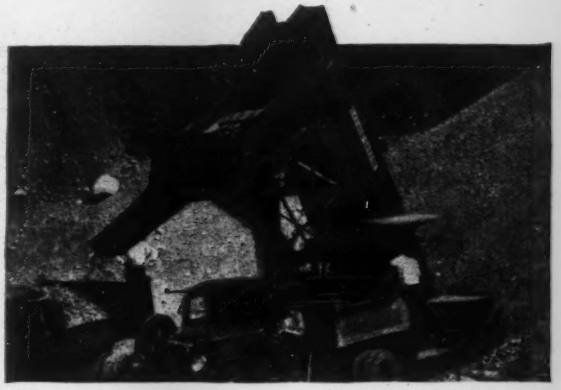
BARBER-

B-G MIXERS

THE Barber-Greene Bituminous Mixer operates continuously. Continuous operation permits a relatively small machine for its high hourly capacity. It is usable either in a central or travel plant set-up, is highly portable, and is equally superior in stabilized or bituminous work.

Q1

B-G LOADERS



BARBER-GREENE Bucket Loaders offer by far the cheapest means of loading bulk materials from ground storage to trucks. They may be equipped with a vibrating screen as shown here, loading and screening simultaneously. This Barber-Greene has many distinctive advantages which deserve your investigation.

Q2

B-G DITCHERS

BABER-GREENE Ditchers are made in four different models: The Standard machine for general ditching up to 8′ 3″ deep and 24″ wide, The Pipe-Line Special for fast cross country work, The Utility Special with the Off-Set Boom for working in close quarters, and The Service Special for easy trailer hauling, and small service jobs.

Q3

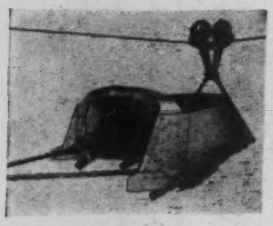
B-G CONVEYORS

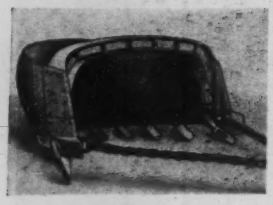
BELT Conveyors are recognized as the cheapest means of transporting materials over short distances. In addition to this important feature, Barber-Greene Belt Conveyors have many other advantages. Their Standardized Sectional Construction gives easier, faster erection, more flexibility, prompt shipment from stock, and high resale value. Barber-Greene Belt Conveyors are built for contracting.

Q4

BARBER-GREENE COMPANY, 422 West Park Avenue, Aurora, Illinois, U. S. A.

BARBER-GREENE





Illustrated above are three sizes of Crescent scraper buckets including one with carrier for slackline operation.

CRESCENT
REGISTERED U. S. PATENT OFFICE
DRAG SCRAPERS

Streamlined Bucket Handles Materials at 50% Saving

ON thousands of projects all over the world, Crescent drag scraper buckets have proved their ability to move materials—either in excavating or in stockpiling and reclaiming—at lowest cost, in many instances at one-half the cost of doing the same work with other types of material-handling machinery.

The secret of this efficiency is in the streamline design of this unique bottomless bucket. A Crescent scraper penetrates hard materials with the ease of a plowshare, and both in digging and conveying it requires much less line-pull than any other scraper of equal rated capacity. It digs a heaping load in a few seconds, moves this load rapidly over the ground, dumps cleanly when it reaches the dumping point, and then returns at high speed to dig another load. Operating on a haul of 200 ft., a Crescent scraper will average 40 round trips per hour. Sizes range from ¼ cu. yd. to 15 cu. yd.

Ask for Bulletin 147:

SAUERMAN BROS., Inc., 432 S. Clinton St., CHICAGO
Engineers and Manufacturers
Long Range Material-Handling Machinery

Carey BUILT-UP ROOFS Cut Overhead Costs

With nearly a half century's experience in the manufacture and application of roofing, Carey knows built-up roofs and all their problems . . . knows how to build extra years of service into them.

Whatever your roof needs, put the job up to Carey. It will be intelligently engineered and skillfully executed, in minimum time and at the lowest cost consistent with bonded quality.

ASPHALT — ASBESTOS — MAGNESIA

Roofing . . . Flooring . . . Insulations . . . Roof Coatings and Cements
Waterproofing Materials . . . Expansion Joint . . . Asbestos Paper and Millboard

THE PHILIP CAREY COMPANY · Lockland, Cincinnati, Ohio
Dependable Products Since 1873
BRANCHES IN PRINCIPAL CITIES

Recently he has been connected with the Economy Forms Corp. of Des Moines.

JOHN H. KNEPPER has left his post in the city engineering department at Springfield, Ohio, where he was in charge of city WPA projects, and has joined the staff of the city board of park trustees in connection with a WPA park improvement program.

ALEXANDER HARING, retired professor of bridge and railroad engineering at New York University, has been appointed secretary to the New York City Department of Public Works.

G. E. WRIGHT, formerly city engineer and superintendent of public works of the city of Corning, N. Y. and more recently in private practice there, has joined the staff of Solomon & Keis, consulting engineers of Troy, N. Y.

C. C. HALLYIK has been appointed materials engineer in the Idaho highway department. He has been connected with the department for the past nine years.

MEETINGS

NATIONAL CONFERENCE ON PLANNING, Hotel Statler, Boston, May 15-17.

AMERICAN ROAD BUILDERS ASSOCIATION, annual business meeting, Willard Hotel, Washington, May 24-25.

NATIONAL CONFERENCE ON STATE PARKS, annual meeting Itasca State Park, Minn., June 5-7.

AMERICAN WATER WORKS ASSOCIATION, annual convention, Atlantic City Auditorium and Convention Hall, Atlantic City, N. J., June 11–15.

SOCIETY FOR THE PROMOTION OF ENGINEERING EDUCATION, annual meeting, Pennsylvania State College, State College, Pa., June 19-23.

AMERICAN SOCIETY FOR TESTING MATERIALS, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 26-30.

AMERICAN SOCIETY OF CIVIL ENGINEERS, annual convention, San Francisco, July 26-28.

REGIONAL AND LOCAL

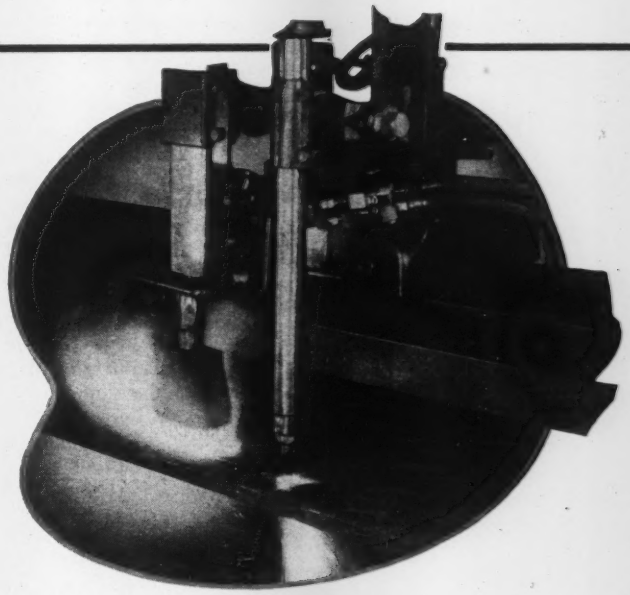
NEW YORK STATE SOCIETY OF PROFESSIONAL ENGINEERS, annual convention, Hotel Commodore, New York, May 26-27.

Measured in Terms of Profitable Results..

MEASURED in terms of profitable results, knowing "when, where, and how" to apply industrial processes is what often counts most. Skill in application usually means more on the balance sheet of business than the price of materials used.

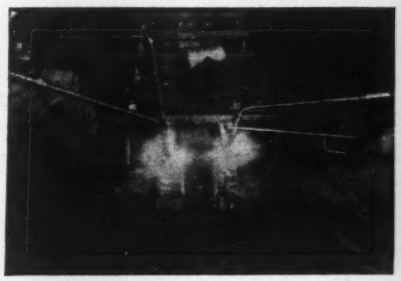
For this reason, Linde goes far beyond assuring the excellence of its products. Linde research works constantly toward the development of new ways to help Linde customers save time and money. Linde's field organization is geared to help customers adapt new or existing processes to their own needs—with an alert eye on control of costs. All Linde men know that, "by helping its customers, Linde helps itself."

Your Linde representative is always ready to tell you more about how Linde methods can benefit your own business. The Linde Air Products Company, Unit of Union Carbide and Carbon Corporation, Offices in principal cities.

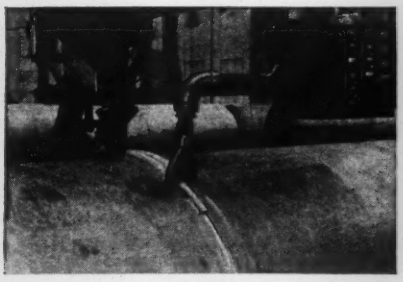


FLAME-SOFTENING—The great bulk of commercially used steel can be flame-cut with no detrimental effect to the cut edge. Certain high-carbon and alloy steels, however, tend when cut cold, to harden along the cut edge. Flame-softening—following the cut—eliminates this problem simply and economically—thereby facilitating subsequent operations such as bending, forming, or machining. Linde men can show you how.

THERE IS MORE TO **Linde** *THAN "EVERYTHING FOR WELDING AND CUTTING"*



HARD-SURFACING — The oxy-acetylene flame and Haynes Stellite hard-facing rod—a red-hard, wear-resistant alloy of cobalt, chromium, and tungsten—can economically hard-face wearing parts to make them last longer.



UNIONMELT WELDING — A fully-automatic, electric welding process. It makes high-quality welds in one pass—in any commercially used thickness of steel—as much as 20 times faster than by other methods.

FLAME-HARDENING — The same oxy-acetylene flame shown above *softening* metal, can be used to *harden* the surface of metal parts—to make them last longer — without affecting the toughness or ductility of the core.

LINDE OXYGEN • NITROGEN • HYDROGEN • RARE GASES AND MIXTURES • UNION CARBIDE
PREST-O-LITE ACETYLENE • OXWELD APPARATUS AND SUPPLIES • UNIONMELT WELDING

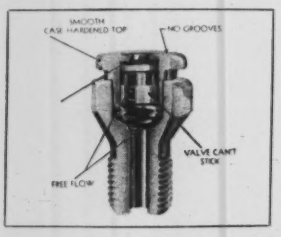
The words "Linde," "Union," "Prest-O-Lite," "Oxweld," "Haynes Stellite" and "Unionmelt" are trade-marks of Units of Union Carbide and Carbon Corporation.

BIG PROJECTS
Completed on Schedule
DEMAND DEPENDABLE LUBRICATION!

ALEMITE GUNS
Help Prevent Costly Delays

● "Write your own testimonial," said Mr. J. R. Condon of the Savin Construction Company, Hartford, Conn., when asked what they thought of Alemite Lubrication Equipment for construction machines. And *that's the way hundreds of other contractors feel about Alemite,* too—knowing that dependable, accurate, easy lubrication with Alemite Equipment is helping them avoid breakdowns, preventing costly delays, cutting maintenance and repair expense.

Whether it's a single Alemite Hand Gun or a complete Alemite Portable Service Station, *you can depend on it to stand up* under the heavy punishment which is part of construction business! Write for catalog.



This new type FREE FLOW Alemite Giant Button Head Fitting opens readily under slight pressure, closes instantly when pressure is released. Makes thorough lubrication easy.

ALEMITE
REG. U. S. PAT. OFF.
WORLD'S LARGEST MANUFACTURER OF LUBRICATION PRODUCTS

ALEMITE—*A Division of Stewart-Warner Corp.*
1821 Diversey Parkway, Chicago, Ill.
Please send your latest catalog of Alemite Equipment for construction machines. Dept. E
Name.....
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Firm Name.....

News continued from page 48

MEN AND JOBS

DONALD PATTERSON who was formerly resident engineer for Harrington & Cortelyou, Kansas City consulting engineers, on the extension of the L.&A. Ry, Atchafalaya River bridge at Simmesport, La., is now resident engineer on construction of the combined railway and highway bridge over the Piscataqua River between Portsmouth, N. H. and Kittery, Maine.

P. F. HOPKINS, head of the administrative staff of the recently eliminated Iowa state planning board, has been appointed to the state board of control. Hopkins, an Iowa State College graduate, was formerly city manager of Ames and of Mason City. In 1935 he was made PWA chief for Iowa.

HUNTER ROUSE has been appointed professor of hydraulics at the college of engineering of the University of Iowa; he will also be consulting engineer to the Iowa Institute of Hydraulic Research. Rouse is a graduate of Toledo University and the Massachusetts Institute of Technology and has done graduate work at the latter institution and at Karlsruhe, Germany. He taught civil engineering at Columbia University for three years and in 1936 joined the staff of the cooperative laboratory of the Soil Conservation Service and California Institute of Technology.

H. H. GARRIGUES, formerly general superintendent of the Central Pennsylvania Division of the Pennsylvania R.R., has been promoted to chief engineer maintenance of way in the eastern region.

J. E. CRAWFORD, vice president in charge of operations of the Norfolk & Western Ry, has been promoted to the rank of vice president-assistant to president; his previous position is being abolished. Crawford began his engineering career in 1895 as a draftsman and later designer for the Pencoyd Iron Works. He joined the railway staff in 1903 as bridge engineer, became chief engineer in 1913, general manager in 1924, and vice president in charge of operations in 1936.

EUGENE R. HOFFMAN, assistant regional director of the PWA at Portland, Ore., has been appointed city lighting superintendent of Seattle to fill out the unexpired term of the late J. D. Ross. After his graduation from the University of Washington, Hoffman worked for the Washington state highway department, rising to the rank of construction engineer. In 1927 he became park engineer of Seattle, joining the PWA staff in 1932 as state engineer. He was later state director, and when PWA was reorganized in 1937 he became assistant regional director.

R. B. HICKOK, who, until recently, was at the Coshocton, Ohio, experimental station of the U. S. Soil Conservation Service, has been transferred to the Purdue Agricultural Experiment Station at Lafayette, Ind. as acting project supervisor on the watershed and hydrologic research being carried on cooperatively by the Department of Agriculture, the Soil Conservation Service, and Purdue University.

BRUCE G. NORFOLK has left his post as supervising engineer for the Colorado State Planning Commission and is now assistant resident engineer inspector for the PWA at Rawlins, Wyo.

HAROLD HALL has resigned his post as junior resident engineer in the South Dakota state highway department to become inspector-engineer for the federal government on the Grand Coulee project.

L. L. FLINT has resigned the post he has held for the past eleven years as division engineer at Shenandoah for the Iowa state highway commission to become managing director of the professional section of the Iowa Engineering Society. Previously he was state vice president in charge of this section.

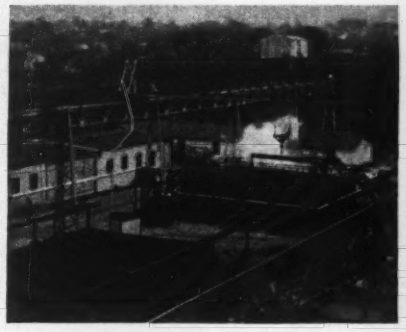
E. TALIAFERRO HEYWARD, technical adviser to the Charleston County, S. C., legislative delegation and former engineer for the Charleston County Sanitary and Drainage Commission, has been appointed assistant manager of the Santee Cooper hydroelectric and navigation project.

RAYMOND J. BRIGGS who has been chief engineer on the WPA staff in Idaho, has opened offices in Boise to practice civil and mining engineering.

KARL A. SINCLAIR, for the past three years senior PWA engineer in Hawaii, has been appointed PWA administrator for the territory. The Hawaiian PWA administration, along with the WPA there, was previously under the charge of Peter E. Bernel, U. S. district engineer.

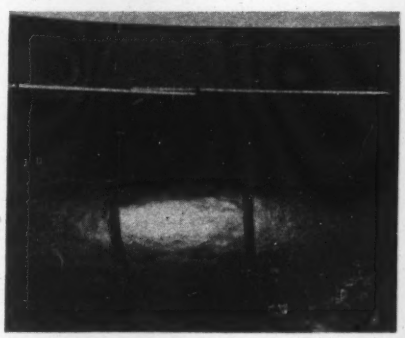
B. B. MONTGOMERY, territorial highway engineer of Hawaii, has resigned

Pickle Elevated Water Tank for Municipal Service at Mansfield

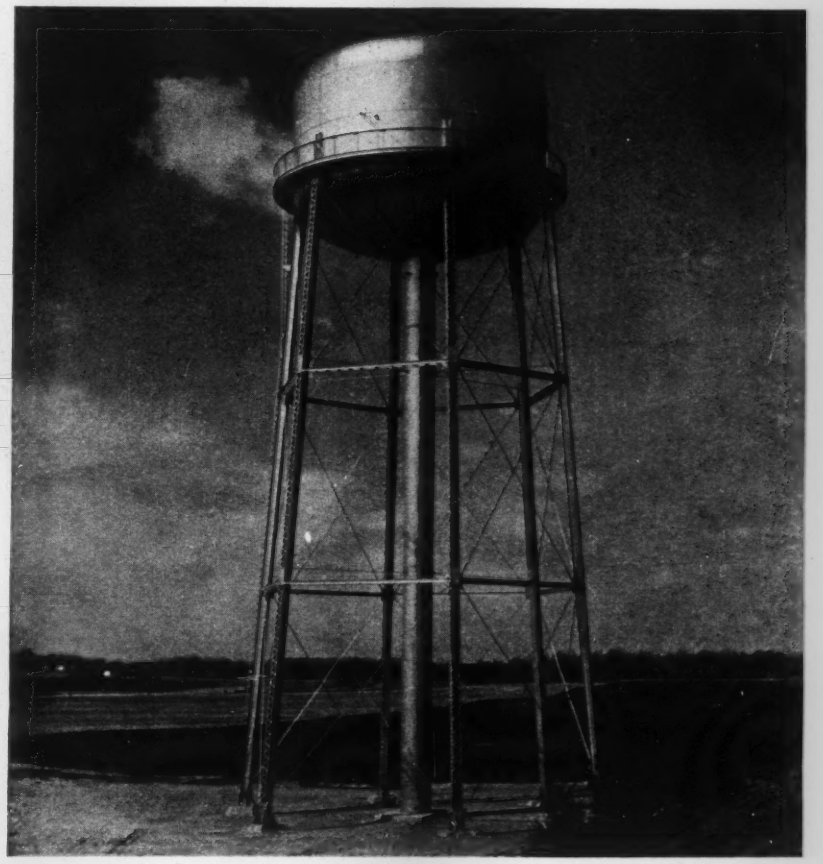


This view shows a steel plate being taken from the pickling vats at our Greenville plant to the painting racks in the left foreground.

Here a pickled plate is being hoisted into position during the erection of the tank at Mansfield, Ohio.



An interior view showing the first ring and bottom of the Mansfield tank fitted up and riveted. The completed tank is shown in the large illustration at the right above.



New Phosphoric Pickling Process Protects Plate Surfaces

The plates used in building this 150,000-gal. elevated water tank at Mansfield, Ohio were pickled by a special phosphoric process before being shipped to the job. It consists of removing the mill scale in a warm sulphuric acid bath, after which the steel is washed thoroughly and dipped into a phosphoric acid solution to which iron phosphate has been added. On being taken from the final bath, the plates are placed in racks and a coat of special paint applied while the metal is still warm. This prevents the surface from becoming dirty and hastens the drying of the paint.

The final phosphoric acid bath leaves a thin coating of iron on the plates which acts as a rust inhibitor. In addition, it provides an improved bond between the metal and the paint.

Phosphoric pickling removes the mill scale from the plates thoroughly and uniformly. It provides a cleaner surface for the shop coat of paint than either sand blasting or wire brushing after weathering. The improved bond between the metal and the paint increases the life of the coating and cuts down maintenance costs.

For over a year and a half we have been pickling fabricated material by the phosphoric process *at our Greenville, Penna. plant.* We will be glad to discuss the advantages of pickling tanks and steel plate work for installations that can be shipped economically from that location.

CHICAGO BRIDGE & IRON COMPANY

Chicago ..... 2101 Old Colony Bldg.
New York ..... 3311-165 Broadway Bldg.
Cleveland ..... 2201 Rockefeller Bldg.
Philadelphia ..... 1625—"1700" Walnut St. Bldg.
Boston ..... 1307 Consolidated Gas Bldg.
Houston ..... 2919 Main Street
Tulsa ..... 1617 Hunt Bldg.
Birmingham ..... 1520 North Fiftieth Street
Dallas ..... 1402 Liberty Bank Bldg.
Detroit ..... 1506 Lafayette Bldg.
San Francisco ..... 1020 Rialto Bldg.
Los Angeles ..... 1411 Wm. Fox Bldg.

Plants at BIRMINGHAM, CHICAGO and GREENVILLE, Pa.

Somebody *thought*.... so somebody *Saved* by making this a DARLING installation!

Care in selecting valves and hydrants means economy in operation. Darling installations throughout the country have proved this for years—and will continue to prove it for years to come.

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Make it a point to call in the Darling representative whenever you encounter a valve or hydrant problem.

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DARLING
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All parts of Darling Hydrants are accessible and interchangeable. There are many other important advantages.

that post and plans to join the contracting firm of James Glover.

JACK C. MYATT has been named acting territorial highway engineer of Hawaii to replace B. B. Montgomery. Myatt, a graduate of the University of Hawaii, has been connected with the department of public works there since 1931.

S. J. SHRODE, who was formerly superintendent of the Potrero shaft for the Metropolitan Water District of Southern California, is now superintendent for the West Construction Co. on shaft No. 3 of the new Southborough Aqueduct tunnel for the Boston water supply.

PAUL C. DEHAVEN has been appointed resident engineer at Ephrata for the Pennsylvania highway department.

JOSEPH R. GILLILAND has been made resident engineer at Franklin for the Pennsylvania highway department.

EZRA B. WHITMAN, Baltimore consulting engineer, has been appointed chairman of the Maryland state roads commission. Whitman, a 1901 graduate of Cornell University, has practiced in New York, Chicago, Pittsburgh and Baltimore. He was formerly connected with the Baltimore Sewerage Commission and later with the Maryland Public Service Commission.

D. W. MOULTON, who has been in charge of WPA farm to market roads in Tennessee for the past two years, has been appointed district administrator of WPA at Chattanooga, to succeed J. W. Gentry, recently made chief engineer of the state highway department. Before joining WPA, Moulton was with the state highway department for twenty years.

O. F. GOETZ, formerly chief engineer in the Tennessee state highway department, was recently appointed chief construction engineer.

BRIGGS SMITH who was formerly state highway commissioner of Tennessee, has been made chief maintenance engineer in the highway department.

CORNELIUS VERMONT has become associated with Senior & Palmer, New York City contractors. For the past three years Vermont has been with Merritt Chapman & Scott and for twelve years previously was with Arthur McMullen Co. He superintended pneumatic foundation work for both these companies, including foundation work for the Pulaski Skyway.

REPORTS AND PAMPHLETS

(*Continued from p. 82*)

NEW BEDFORD, MASS.—Report of the Water Board, 1938.

DEVELOPMENT OF THE CAST IRON PRESSURE PIPE INDUSTRY IN THE SOUTHERN STATES 1800–1938. The Newcomen Society, Birmingham, Ala.

RICHMOND, VA.—Annual Report of the Director of Public Works, 1938.

ST. PAUL, MINN.—Fifty-seventh Annual Report of the Board of Water Commissioners, 1938.

DELAWARE RIVER BASIN—The Upper Valley, Planned Development or Exploitation? Series B, No. 2, The Interstate Commission on the Delaware River Basin, Trenton, N. J.

NEW YORK ADVANCING—WORLD'S FAIR EDITION. By F. H. LaGuardia, Mayor.

AN INVESTIGATION OF RIGID FRAME BRIDGES—Part I, Tests of Reinforced Concrete Knee Frames and Bakelite Models; Part II, Laboratory Tests of Reinforced Concrete Rigid Frame Bridges. The Engineering Experiment Station, University of Illinois, Urbana, Ill.

FATIGUE TESTS OF BUTT WELDS IN STRUCTURAL STEEL PLATES—Engineering Experiment Station, University of Illinois, Urbana, Ill.

A REVIEW OF RAILWAY OPERATIONS IN 1938—Special Series No. 67, Association of American Railroads, Bureau of Railway Economics, Washington, D. C.

HIGHEST AND LOWEST STAGES OF THE MISSISSIPPI RIVER and Principal Tributaries, to 1937. Office of the President, Mississippi River Commission, Vicksburg, Miss. Price $4.

STATE WATER SURVEY OF ILLINOIS, Bulletin No. 21, Supplement 1. State Water Survey, Urbana, Ill.

COLORADO RIVER AQUEDUCT—Fourth Edition. Metropolitan Water District of Southern California, Los Angeles.

REPORT OF SPECIAL COMMITTEE ON DEPRECIATION PRINCIPLES AND METHODS—National Association of Railroad and Utilities Commissioners. Published by The State Law Reporting Company, 30 Vesey St., New York. Price $1.50.

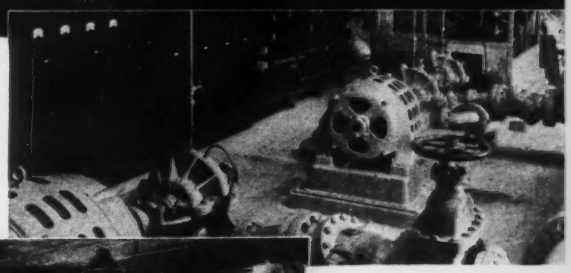
ENGINEERING PROPERTIES OF MONEL—Development and Research Division, The International Nickel Co., Inc., 67 Wall St., New York.

MINNESOTA—Financial Statement of Hennepin County, 1938.

DELAWARE—Report of Mosquito Control Work, 1938.

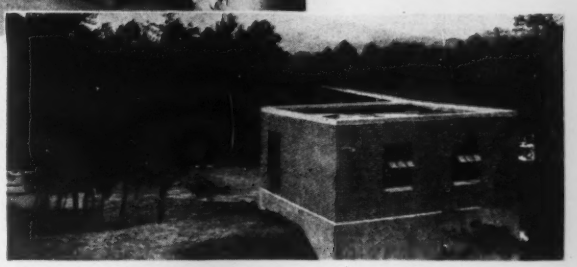
WATER POLLUTION IN THE UNITED STATES—Third Report of the Special

Bristol Chooses F-M Pumps for Municipal Plant . . . .



Three high-head F-M pumping units for delivering water to reservoirs from the Bristol, Tenn. filtration plant.

Interior of the low-lift pumping station, showing motor-, and engine- and motor-driven vertical F-M turbine pumps.



Water flows by gravity from the concrete intake crib, at left, through a 24-in. pipe line to the pumping station.

Bristol, Tenn. formerly depended upon a neighboring city for its water supply. Today all that is changed. A modern municipal plant—completely equipped with Fairbanks-Morse pumps—now furnishes plenty of fresh water to the homes of Bristol.

Water flows from an intake crib in the Holston River to a wet well in a low-lift pumping station. Two F-M Fig. 6920 16-in. turbine pumps, driven by F-M motors, deliver water from the pumping station to the filtration plant. Three units—each consisting of two F-M Fig. 5814-NE centrifugal pumps driven by F-M synchronous motors—deliver filtered water at 850 and 1700 g.p.m. against a 526-ft. total dynamic head through a 20-in. main to reservoirs.

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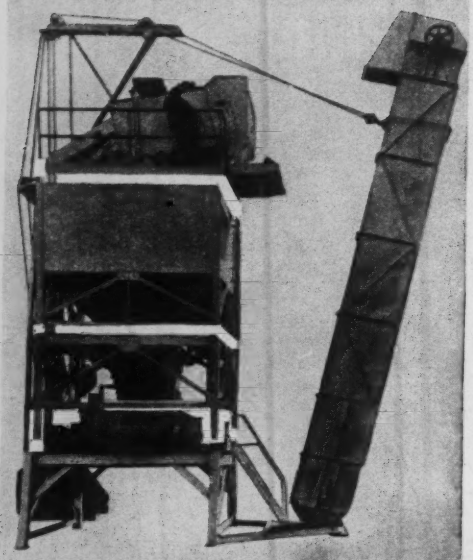

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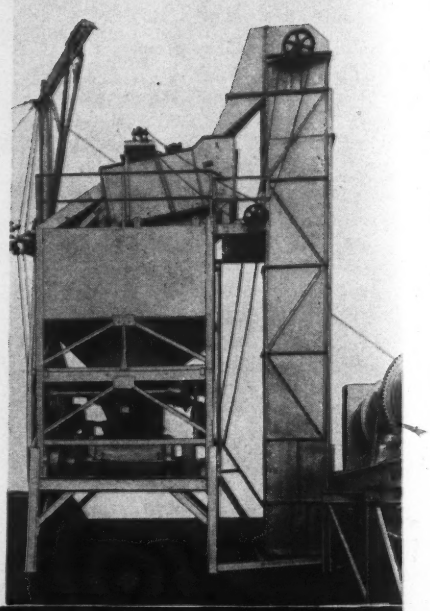

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Advisory Committee on Water Pollution. National Resources Committee, Washington, D. C.

FACE-TO-FACE DIMENSIONS OF FERROUS FLANGED AND WELDING END VALVES—American Standards Association, January, 1939, New York.

CAST-IRON PIPE FLANGES AND FLANGED FITTINGS, Class 125—American Standards Associations, New York.

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"MORE WATER GLIDETH BY THE MILL THAN WOTS THE MILLER OF"—A pamphlet on savings due to use of water meters. Neptune Water Co., New York.

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LYNCHBURG, VA.—Annual Report, 1938.

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PERCOLATION AND CAPILLARY MOVEMENTS OF WATER THROUGH SAND PRISMS—University of Iowa, Iowa City, Iowa. Bulletin 18.

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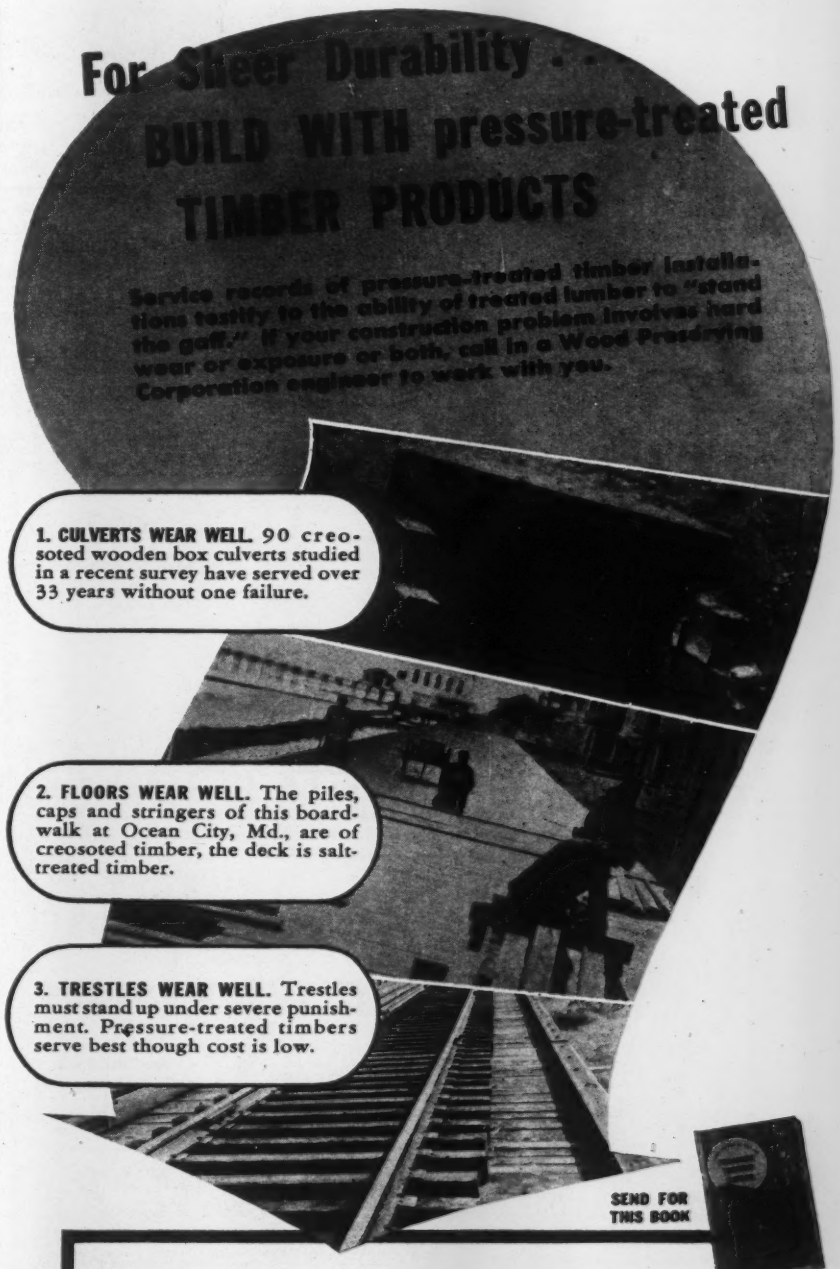
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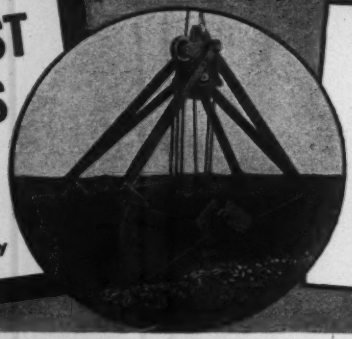

The value of our forty years experience in building better buckets is best demonstrated by the enthusiastic comments of their owners. Here is one recently received. "We are handling more coal with our new Industrial Brownhoist 1¼-yard Clamshell than we ever did with our old 2-yard bucket."

Because the new Industrial Brownhoist buckets are designed to meet today's materials handling problems, increased production and profits invariably result wherever they are used.

Get the complete facts from Booklet 353. Send for a copy.

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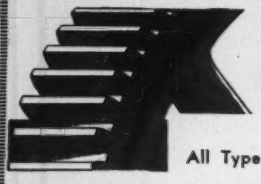

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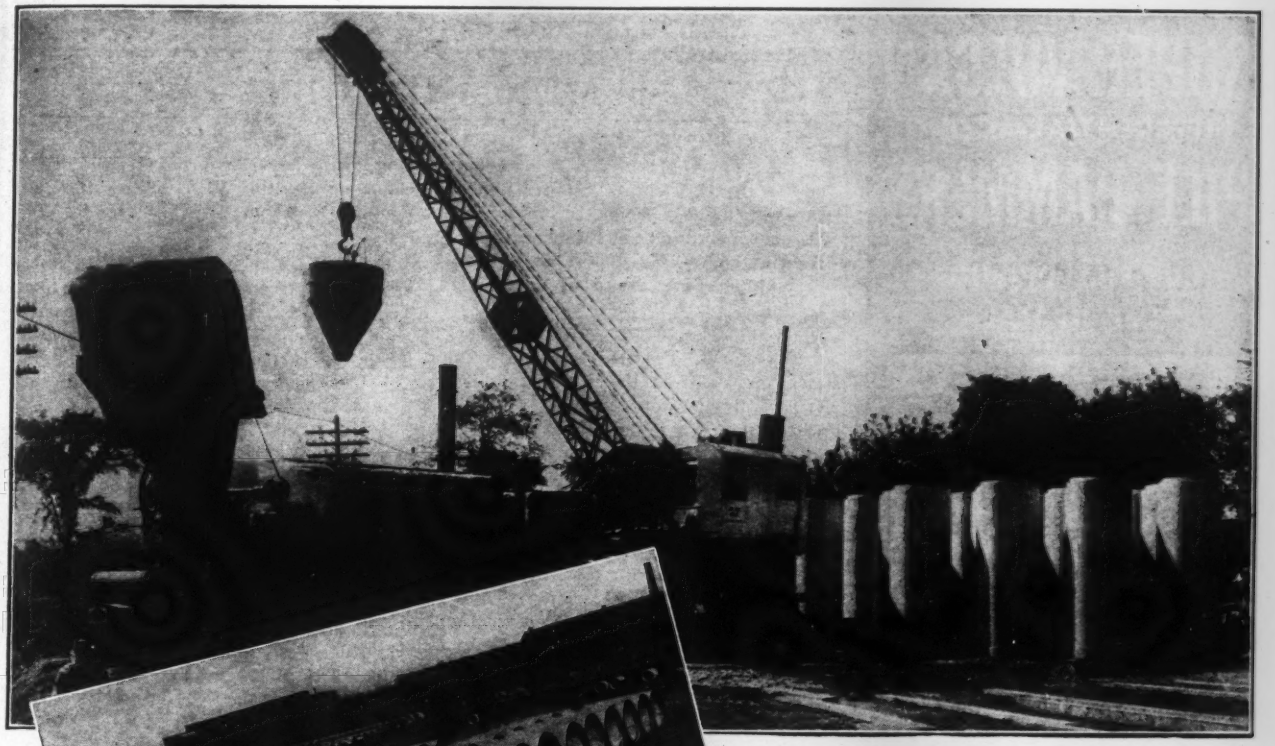

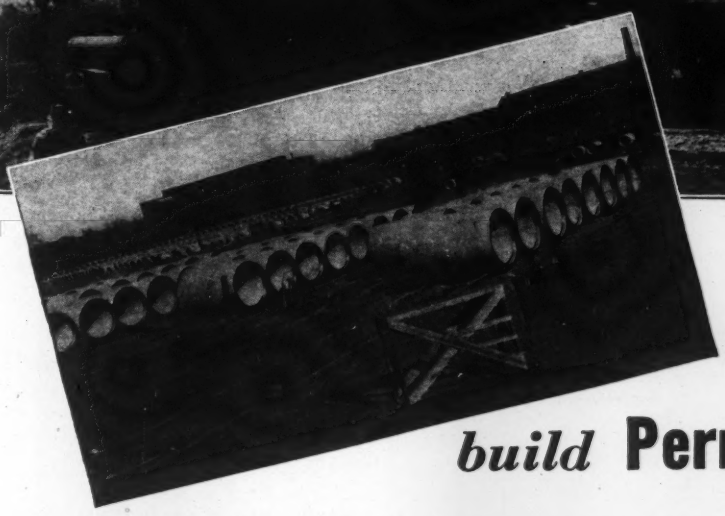

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Each year more and more progressive cities throughout the Country select Lock Joint Reinforced Concrete Pressure Pipe for their main water supply lines.

Lock Joint Pipe Lines are at present being constructed for the following major cities:

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These forward looking municipalities are purchasing the finest pipe line materials available. The durability and trouble-free qualities of Lock Joint Pipe assure at least a century of high capacity service.

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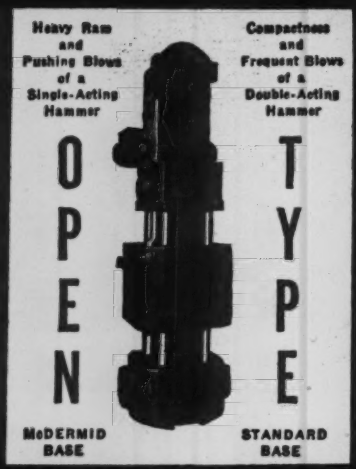
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News continued from page 66

MEN AND JOBS

HERBERT W. WITTE has resigned his post with the Georgia State Highway Department to become a junior civil engineer with the U. S. Engineer Corps., Huntington, W. Va., office. He is working the masonry group of the design section.

FRANK W. PARKER resigned some months ago from the U. S. Engineer Corps, to become assistant engineer with the U. S. Indian Irrigation Service. He was in charge of the testing laboratory at Headgate Rock Dam in Arizona.

A. B. HENNING has left his post as assistant engineer for the Port of New York Authority on Lincoln Tunnel work and is now senior construction inspector for the Bureau of Yards and Docks of the U. S. Navy stationed at Coco-Solo Canal Zone.

HERBERT MOORE, formerly connected with Jerry Donohue Engineering Co., has opened consulting offices in Milwaukee, specializing in water supply, sewage disposal and residential hotel and industrial reports. Earlier, Moore worked for Greeley and Hansen on various projects which included inspection on the Buffalo sewage treatment plant.

JOHN C. MCNICOL, manager of the Lake Forest, Ill., water department for many years, has been made city manager there.

THOMAS J. BURRIN has been appointed superintendent of the municipal sewage plant at Kokomo, Ind., succeeding David R. Miller, recently resigned. Since Jan. 1 Burrin has been appraisal engineer for the Northern Indiana Power Co. and earlier he was superintendent of utilities at Lebanon, Ind.

H. D. MCGAW, assistant resident engineer for the Central Nebraska Public Power & Irrigation District, in charge of the Bertrand, Neb., office, has resigned to become city engineer of Hastings, Neb. McGaw will be succeeded at Bertrand by JOHN H. BEATTY, formerly engineer of property maps at Hastings.

RUDOLPH ANDERSON, WPA zone engineer at Hoquiam, Wash., has been promoted to the rank of Gray's Harbor zone engineer at Aberdeen. FRED BOEDECKER, the previous Aberdeen engineer, will be transferred to the Tacoma or Seattle WPA office after a month's vacation.

O. A. WALKER has resigned his post as division engineer at Muskogee for the Oklahoma State Highway Department to become manager of the Muskogee Sand & Gravel Co. there. Walker has been connected with the highway department since 1922.

F. D. KUCKUCK, county engineer of Mercer County, Ohio, has been made city engineer of Celina, Ohio.

NORMAN S. POWELL has been appointed resident engineer at Pymatuning Reservoir for the Pennsylvania State Forest and Waters Commission. He succeeds JOSEPH STASCNEY, appointed four years ago.

ATHANASE LATOUR, city engineer of St. Jerome, Que., has been appointed assistant deputy minister of the Quebec Department of Roads. He is succeeded at St. Jerome by AUGUSTE MORIN.

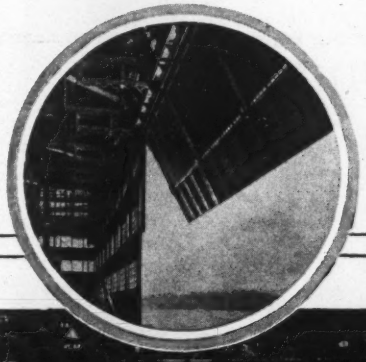
PHILIP J. TURNER, professor of building construction at McGill University in Montreal, has been appointed acting director of the school of architecture there.

HUGH LUMSDEN has resigned his post as engineer and road superintendent of Wentworth County, Ont. He is succeeded by ERNEST BARRETT.

R. W. MCCOLOUGH, chief engineer of the Nova Scotia department of highways, has been appointed deputy minister of the department of highways and public works.

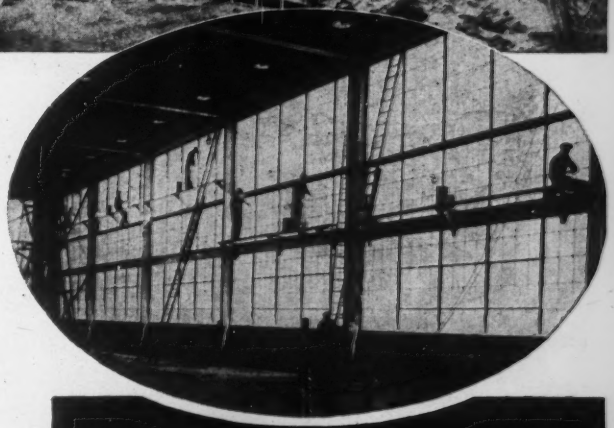
JOHN STEARNS, formerly division engineer for the Metropolitan water district of southern California and recently principal engineer in the division of power and flood control service of the Federal Power Commission, has been appointed assistant executive director of the Los Angeles county housing authority.

HARRY O. WHEELOCK has been appointed district township engineer in the Pennsylvania highway department, District No. 1, Franklin. WILLIAM B. BASSETT has been made engineer in District No. 6 at Philadelphia and JOHN D. LOWER has been made resi-



DOUBLES 'PLANE PLANT IN DOUBLE-QUICK TIME

Engineers and Architects—Albert Kahn, Inc.



● Due to Truscon's previous splendid record of quick delivery on the original Glenn L. Martin project, which included fabrication and installation of the world's largest canopy lift door, the owners called upon Truscon to serve them again in this latest emergency.

Truscon was given orders to supply a vast quantity of diversified steel products. Included in this huge order were Truscon horizontal pivoted windows, standard industrial doors, straight slide doors, canopy lift doors, reinforcing bars, welded steel fabric, Ferrobord steeldeck roof and adjustable steel inserts.

Truscon's great diversity of standard steel products for the Building Industry made it possible to center a wide scope of responsibilities in one dependable source of supply.

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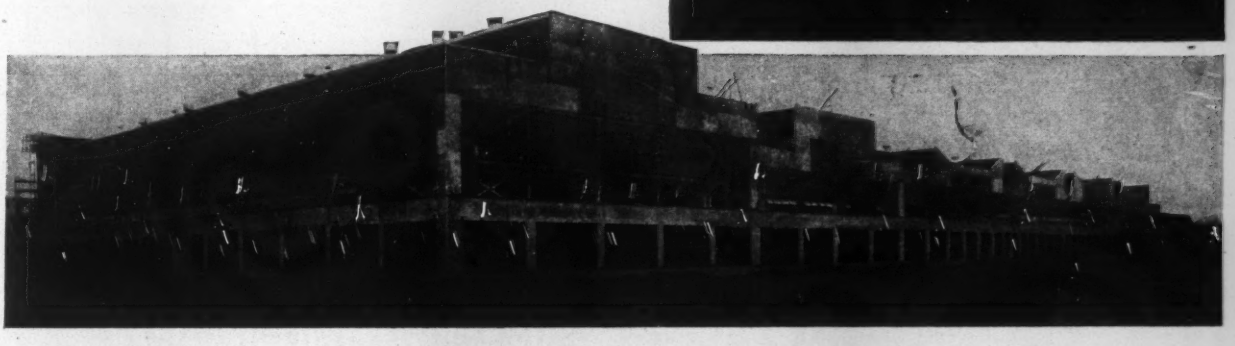


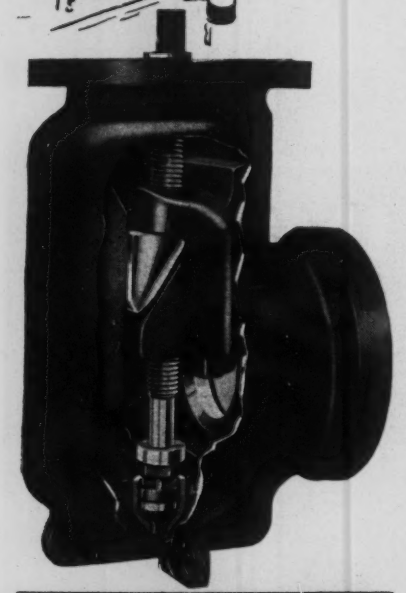
THE BEST
Hydrant
PROVIDES
Proper Drainage

A hydrant must drain *completely* to guarantee constant readiness for service in cold weather. The best hydrant assures proper drainage with drain at the *lowest* point, opening with the last few turns as the hydrant is shut off.

The best hydrant also provides *quick* water with least possible shock, and shut-off without water hammer. It will not flood when broken, because the gate is wedge-locked. It is easily inspected and serviced *without unscrewing anything* below the ground level.

Only the slide gate principle provides *all* these advantages. This principle, developed and perfected by Ludlow, has been the universally accepted construction in all *water works valves* for nearly three-quarters of a century. It likewise insures *complete security* in fire hydrants.

Information free on request.



The LUDLOW VALVE MFG·CO· SINCE 1866 TROY·N·Y·

(Continued from p. 41)

MEN AND JOBS

JOHN E. JACKSON has been elected president of the Pittsburgh-Des Moines Steel Co. to succeed his father, who died in April. Jackson was graduated from Iowa State College in 1924, and since 1935 has been general manager of the company's construction department.

JAMES C. BONBRIGHT, professor of finance at Columbia University and vice-chairman of the New York State Power Authority since 1934, has been elected chairman of that Authority to succeed FRANK P. WALSH, who died recently.

ALBERT MOLENAAR has resigned from his engineering position with the Nebraska Agricultural Extension Service to be irrigation engineer for the Rural Electrification Administration. He will be located at Kearney, Neb.

F. W. MOHLMAN has been appointed adjunct professor in sanitary chemistry at Armour Institute of Technology, Chicago. Mohlman received his PhD. degree from the University of Illinois in 1916. Before coming to his present position as director of the laboratories of the Chicago Sanitary District in 1919, he acted as director of the New Haven, Conn., Experiment Station. He is editor of *Sewage Works Journal*.

ROLF ELIASSEN has been appointed assistant professor of sanitary engineering at Armour. Since receiving his doctor's degree in sanitary engineering from Harvard University in 1936, he has been employed with the Door Company.

HARRY A. WORTHAM, of Anchorage, Ky., former Louisville contractor, has been named director of Region 3 of the Public Works Administration. He has been acting director of the region, comprising nine southern states, since March.

WILLIAM F. KUEHNLE, senior engineer of the Little Rock district, U. S. Engineers, will be principal civilian engineer for the new Tulsa district office, to be established July 1. CAPT. HARRY A. MONTGOMERY will be the Tulsa district engineer.

OWEN SMITH is the new traffic engineer for the Oklahoma state department of safety. He replaces VIRDEN A. RITTGERS.

JOSEPH L. SUITER, North Carolina director of FHA, with offices at Greensboro, N. C., has resigned from this post.

HAROLD GROTH has resigned as chief of the land and water division of the Iowa Conservation Commission and has returned to Chicago to resume work with Consoer, Townsend & Quinlan, consulting municipal engineers. He was previously with the Chicago firm from 1926 to 1933.

HARRY STEDMAN was re-elected city traffic engineer at a meeting of the board of directors of the Des Moines Safety Council June 2. The meeting adopted by-laws and effected a permanent organization to unite into one body 63 civic, fraternal, religious and commercial organizations for the purpose of reducing traffic accidents in Des Moines. M. C. NELSON was elected president.

HOWARD S. REED and SHELDON K. BAKER have announced their return to the general practice of engineering in Phoenix, Ariz. This practice had been suspended during the service of Baker with the National Resources Committee and of Reed as state director of PWA and as state highway engineer.

W. B. KING, of Oxford, N. C., sanitary engineer for Granville county for the past three years, has resigned to accept a similar position serving Dare, Tyrell and Washington counties in North Carolina.

EDWIN J. THUTHAM, Columbus, O., has been appointed engineer in charge of construction of the $2,000,000 Champion Avenue housing project in that city. A graduate of Cornell University, he has been in construction work in Cleveland during the last five years.

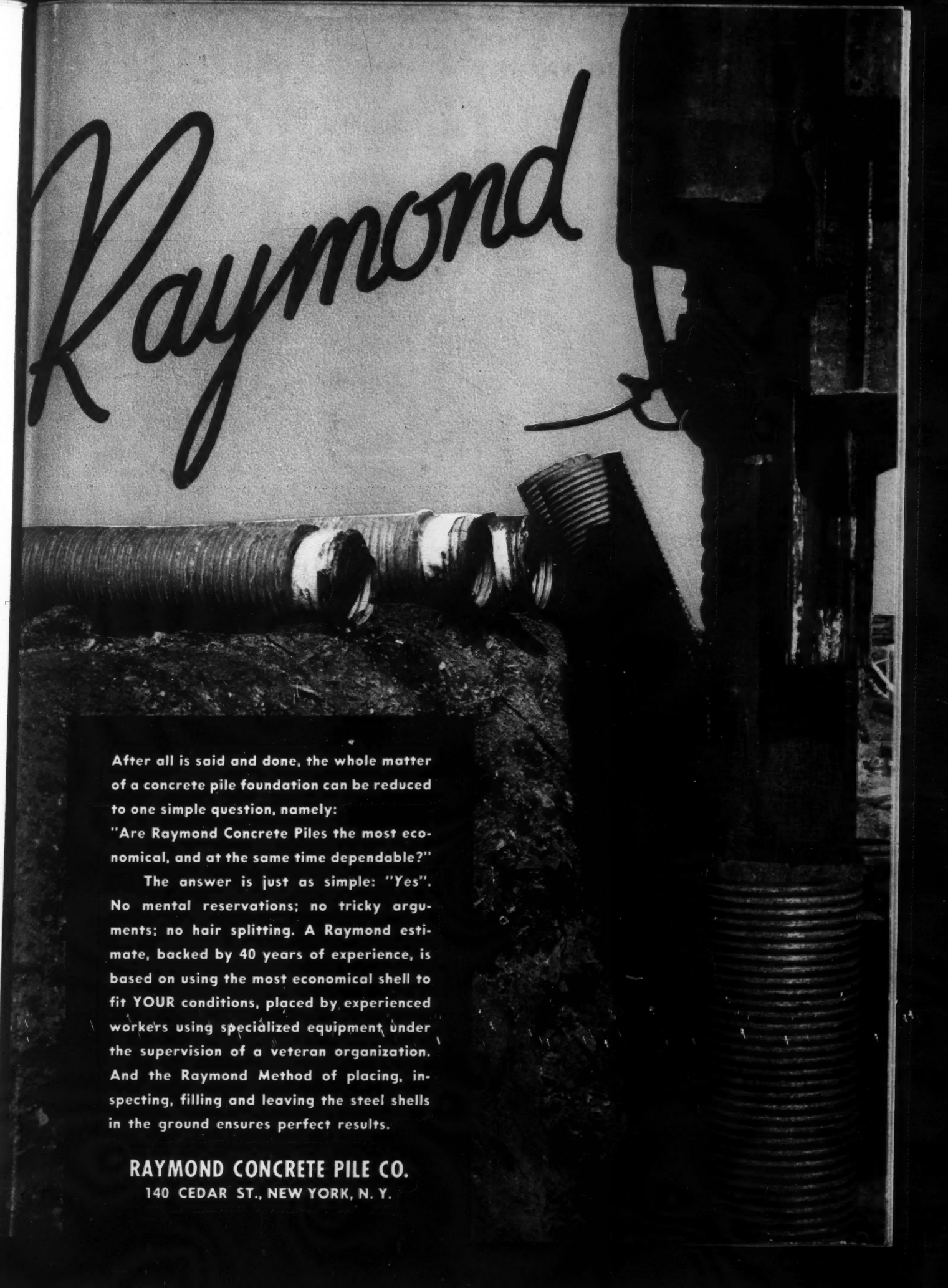
MRS. MARTHA HOFER of the Falls City, Neb., WPA office has been named assistant WPA Area Engineer at Nebraska City. Mrs. Hofer, who served as boss of a grading gang several years ago, will assist Area Engineer H. W. Gausman in Otoe, Cass, Nemaha and Richardson counties.

MEETINGS

AMERICAN SOCIETY FOR TESTING MATERIALS, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 26-30.

NATIONAL COUNTY OFFICERS ASSOCIATION, annual convention, Ogden, Utah, July 17–19.

AMERICAN SOCIETY OF CIVIL ENGI-



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